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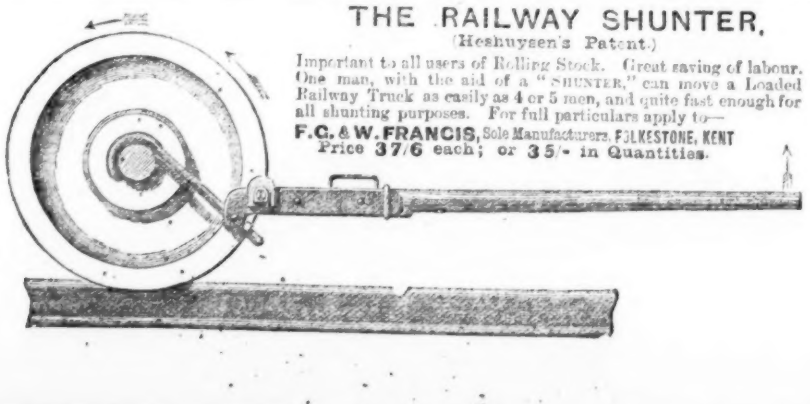

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[BY OUR SPECIAL REPORTER.]

Having considered the preliminaries leading us to the working of stratified deposits, and especially the working of coal, we may now consider some circumstances in which they are worked on the post and stall, or pillar and room, or stoop and room, system, which consists of open spaces (stalls or bords) of certain width between certain solid masses, which are termed pillars, or stoops. This system is very frequently employed in our own country and on the Continent. The antiquity of it is no doubt very great, because it will readily occar to you that if you saw the outcrop of a regularly bedded mineral, it would naturally be the case that you would make an opening of such a width that the roof would not require special support; and then, if you want to set more men on, you would leave an intervening pillar, and make another opening at a little distance. The opening out of a new district on this method could be seen not long ago in the Cleveland district, near Middlesborough. The openings were pushed into the side of a great hill, and as they advanced in of course the width of the pillars became less. The question resolves itself into this—What length of ground can be opened by means of these galleries or bords, and what width of pillars will it be necessary to leave?

We may refer, first, to the case of the working of building stones, on a somewhat similar method, except that in such case, the rock being strong, the pillars are usually left of small size. This may be seen in the quarries of Egypt and Hindostan. The pillars there are rectangular, and sometimes, if the ground is not very firm, the openings are made arched. The catacombs of Paris and Rome, and the caverns of Maestricht, have been wrought on a system not unlike this. There is nothing more striking, and more worth study by the student, than the working of the Upper Silurian limestone in the neighbourhood of Dudley, which has for many years supplied the flux for the ironworks of Worcestershire and South Staffordshire. At Dudley, where the limestone dips deep, access is had by means of a shaft and cross-cut; chambers are then opened in it 16 yards wide, leaving pillars between 6 yards wide, which are bored through at intervals of 8 yards, for a distance of 8 yards; thus the pillars will ultimately stand in series each 6 by 8 yards. Another remarkable instance to be seen in our own country is that of the quarries at Box, near Bath. In this case the stone being strong, the angle of dip moderate—almost flat—and the character of the rock such as renders it capable of being cut with a saw, there is a degree of regularity such as is scarcely to be seen in any other workings. The headings, or galleries, are 25 ft. wide, and are crossed by others, leaving pillars between about 12 ft.; the height of the stratum varies from 8 to 20 ft. in the district. As mentioned before, they use a very long handled pick in these quarries for the holing, and then cut away the rock with a saw; the pillars are left permanently for support. At the salt mines at Northwich, in Cheshire, as a rule the bed is about 14 or 15 ft. thick, and the openings are no less than 25 yards in breadth, a rib being left between 8 yards in breadth, which is again cut through at intervals. The tenacious character of the salt is remarkable: the lecturer had measured openings 36 yards wide, where there was no pillar to support the roof, and not a crack was visible. It is almost useless to leave these walls if they are afterwards to be abandoned to the water, and made into mere tanks of brine: the whole surface of the district is being so changed that it is a serious question what should be done. Only two or three of these mines are still working, the salt being usually obtained from brine. Another instance of pillar working, in which a few pillars do a large amount of work, supporting large openings between them, is to be seen in the neighbourhood of Festiniog, in Wales, where the slate quarry passes from an open to an underground working. The chambers there are 15 yards broad, sometimes more, and the pillars between are of similar thickness. In consequence of the enormous waste of valuable substance left in these pillars, it becomes a question whether they are to be left as permanent supports for the roof, or left only to be removed more or less at some future time.

We may pass now to this system as more applicable to coal, and to seams of ironstone, as in North Yorkshire, where, however, the strength of the ground renders the pillars smaller than is generally the case in collieries. The history of the pillar and bord system is admirably illustrated in some of the works which have been published by the intervention of Committees of Parliament appointed to enquire into cases of explosions, especially those in 1835, 1848, and 1853; as also the reports prepared by Prof. John Phillips and Mr. Blackwell as to the desirability of Government inspection. The subject, as a whole, resolves itself in the first place into the question whether we are to consider the pillars as intended to be left for the support of the roof, to enable us to get away all the coal we can, or whether we are to look on them as being reserves of coal which we are to get out by proper means, when a suitable time comes. By this latter method, when the pillars are properly proportioned, it may be that the larger proportion of the coal will be gained, whereas by the old method (that is to say, the former of the two) it was by no means an unusual thing to find that 50 or 60 per cent. of the coal was lost. In some of the comparatively shallow workings in Durham this old method may be found still, where the coal is apt to become small in the pillars, and to be affected by oxidation. Three headways, or courses, are driven on the end of the coal, about 30 yards apart, and these are crossed by the bords, which in the shallower workings may be four yards broad, with a pillar of 1 yard between to support the roof. It will be necessary to widen the pillars at the end, making the entrance to the boring only 2 yards wide, otherwise the roadways will very soon be crushed. When greater depths began to be attained it was found that pillars of neither 1, 2, nor 3 yards were sufficient to resist the pressure, which would tend to crush the whole system of these workings; or, what was still worse, sometimes a creep would be shown. Then pillars of 3 yards would alternate with bords of 4 yards wide, and unless the floor and roof are very unsatisfactory, you may hope that 4 yards will be quite sufficient, except at very great depths. But when it came to such collieries as began to be opened out at the end of last century in the neighbourhood of Newcastle, larger dimensions were required. About the year 1795 Mr. Thomas Barnes commenced as a regular system the taking away of some of these pillars, and pointed out that they should, in the first instance, be left of extra size, in order that they might not be injured. In the commencement of these operations they were very cautious, and could obtain but a very small proportion. The method they attempted was to put in some strong stopping, and then to cut portions off the pillars at both ends. In this case you might expect the roof to fall in, and therefore destroy the roadways, hence it was necessary to commence these operations near the boundary. It then became a question whether you could dare to interfere with the neighbouring pillars in this way, or whether it would let down the surface, as it probably would in shallow workings. Various methods of cutting the pillars were adopted; sometimes they took away the end of the pillar, at others they took a slice off each side, at others, again, a bord was driven through the central part of each pillar, or in some cases only a little of the middle part was taken.

When Mr. Buddle, supported by Mr. N. Wood, took up the question he found that a very large proportion of the mineral could be saved by these means, and very soon the percentage of coal obtained rose from 39 to 54 per cent, and then to 80 per cent. in some cases, when they could work off the intermediate pillars. At the same time another plan was introduced by Mr. Buddle, which was of high importance. He showed that running over the whole ground with these bords and headway courses was not an advisable plan; that you had then tens of thousands of yards of workings left open to the influence of the air, and therefore oxidising at the same time that they were feeling the pressure from above This tended to make the mineral lose its proper consistency and strength, and when you came to work it you found it more or less damaged. It was proposed, partly on account of the ventilation, partly to prevent this damage to the coal, that only a limited area should be worked at a time, that when you had got a certain portion of ground thus broken by these bords, you should proceed to get the pillars. Mr. Buddle's plan, in fact, was to divide an extensive royalty into areas which should be termed panels, and this was termed panel working. Between the panels there will be strong ribs of coal, from 40 to 60 yards thick, and having between them and the main lines of thoroughfare three large ribs, so that you have a mass of coal intended to be worked only towards the close of operations, separating the panel from the others. Meanwhile as the workings passed down from the outcrop to deeper parts of the coal field it became necessary to leave a larger and larger mass on the first working, so that it is now common to work away only one-third part of the coal at first, leaving two-thirds in the pillars to be worked afterwards. When they get down to the neighbourhood of the North Sea, and intend to work out beneath it, pillars of unusually large size are left, in some cases 40 yards square, and in the Monkwearmouth Colliery, at a depth of 300 fms., pillars of even greater dimensions. In the Whitehaven collieries a very remarkable difference is observable between what is done now for working in the most economical way and what used to be done: then pillars used to be 10, 12, or 15 yards square, now they are 20 yards square, with openings of 5 yards breadth. In working the iron ores of Middlesborough these bords may be frequently of 4 or 5 yards in width. In some cases, where there is any difficulty about the roof, they must be narrower; these are crossed by headways somewhat narrower, leaving the pillars 20 by 6 yards.

The division of the whole area into these panels renders it possible to introduce the pillar working; soon after the commencement of the narrow working; and then it becomes a question how far the use of safety-lamps and of open lights is consistent in the same division of the colliery. We shall find that while the pillars are being got we are subject to extremely heavy falls from the roof, and also to large volumes of gas being liberated, therefore it would be exceedingly insecure for the working there to go on without the use of safety-lamps being rigidly enforced. It is different in working the whole coal; there in most cases open lights may be used, in connection with a due system of ventilation, &c. Where both open lights and safety-lamps are employed in the same district, the workings should never be nearer together than three pillars, and due precautions should be taken to prevent anyone with an open light passing into the safety-lamp district. When there are several seams of coal, one above another, it becomes a question which would better be worked first, for it is found that where they are within a moderate distance of each other the working in one seam affects the others; sometimes the working in the upper would be prejudicial to those below, sometimes it seems that no harm is done. There is a very good paper by Sir George Elliot in the Transactions of the Northern Institute, which treats of this subject. As a general rule it is supposed to be better that the upper seam should be worked, and the ground allowed to settle, before the lower seam is opened. The pillars will be removed by the assistance of packwalling, or the stuff which falls from the roof built up into walls in certain places, and by the aid of suitable timbering, and much will depend upon the quickness and skill of the men employed. In some cases it may be necessary to begin to remove the pillars at once: sometimes as much as half is left. In the Mostyn Collieries there are 4 yards pillars and 4 yards openings. This may be the case where it is desirable to remove at once the sum total of the coal which it is desired to take out, and then to give up the work altogether.

INSTITUTION OF MECHANICAL ENGINEERS.

The summer meeting of the members of this Institution was held on Tuesday, in the Lecture Theatre of the Midland Institute, Birmingham. Mr. Thomas Hawksley (president) presided. There were also present—Messrs. F. J. Bramwell (ex-president), Edward A. Cowper, J. Read, D. Adamson, F. W. Webb, C. Cochrane, Maw, E. Rich, Abel, W. P. Marshall, &c. The CHAIRMAN, in opening the proceedings, said that owing to his long-continued absence abroad he had been unable to prepare the address which it was customary for the president to deliver at the opening of their annual meeting. He did not propose to shirk the obligation placed upon him—the delivery of the customary address—but he thought it would be more advantageous to them, as well as preferable to himself, to deliver on a future occasion a carefully considered written address than to trust to ordinary oral delivery, especially as he proposed to make reference to important statistics connected with the mechanical engineer. He was sorry to announce the decease of two of their most valuable members—Mr. Robert Napier, of Glasgow, and Mr. Byran. He was quite sure they would all agree with him that it was desirable in both cases to pass a vote of condolence to the families of both gentlemen. (Hear, hear.) The proposition was unanimously adopted.

Mr. W. P. Marshall (secretary) read a paper prepared by Mr. William E. Rich (London), on "Dynamometers, Friction Brakes, and other Testing Apparatus belonging to the Royal Agricultural Society of England." The writer stated that the concurrence of the summer meetings of the Institution of Mechanical Engineers and the Royal Agricultural Society at Birmingham this year afforded a fitting opportunity for laying before the Institution a description of the most important and testing apparatus belonging to the Royal Agricultural Society. He said he thought it right to claim from his fellow-members a due recognition of the immense debt which engineers and agriculturists all over the world owed to the Royal Agricultural Society for the admirable series of engine and implement trials which it had carried on annually with so much spirit and perseverance for the last thirty years. No other public body had ever done so much, or spent so much, on trials of machinery of any kind, and it would be well if other societies or Government departments would only consider the wonderful effects which those trials had had in improving agricultural machinery, and would try to emulate the society in other branches of mechanical industry. No one could deny that the present degree of perfection was due to the publicity and thoroughness of the society's trials; and one could not but reflect on the numerous benefits which the English Admiralty authorities would confer on marine engineers and the commerce of the world if they occasionally made equally exhaustive and careful trials with marine engines of different types, and published the results *in extenso*. The paper then referred at great length to the three more important instruments belonging to the society, which were classed under three heads—1. Traction dynamometers, for measuring the draughts of implements and vehicles drawn by horses or otherwise.—2. Friction brakes, for absorbing the power developed by steam-engines and other prime movers by uniform frictional resistance.—3. What were commonly called rotary dynamometers, which registered the amounts of power that must be transmitted to various machines from external sources in order to work them."—A vote of thanks was passed to Mr. Rich for his paper, and a brief discussion followed.

The Secretary next read a paper "On Mechanical Puddling," by Mr. T. Russell Crampton, London. The author said that the operation required considerable intelligence and excessive labour, and it was the successful combination of those two elements which constituted the great difficulty, as evidenced by the high wages that good puddlers could command. Although the requirements for good puddling were apparently so simple, manual labour was not to be depended upon for that purpose, consequently mechanical puddling had been called into requisition. Sufficient had been established to enforce the conviction that puddling by the revolving chamber was superior as compared with hand puddling or other rabbling, as not only were the yields increased, but the quality of the product was most strikingly improved. The most careful efforts had been made to obtain equal results by hand from like material, but in every case the rotary puddled product was the best. A number of drawings were suspended in the theatre for the purpose of giving a general idea of the various arrangements proposed. It was stated by the author that in his furnace, where the firing was done mechanically, little skill and no exhaustive labour were required. In order to show the effects of the two systems of making iron there were laid on the table a series of samples, consisting of plates and rails, some produced by the best known makers by the usual process of building up small pieces, and others made from one homogeneous puddle ball.—A vote of thanks was passed to Mr. Crampton, and the meeting adjourned until 10 o'clock this morning.

The meeting was resumed on Wednesday, with a further discussion on Mr. Crampton's paper "On Mechanical Puddling." Mr. W. P. Marshall (secretary) read a paper prepared by Mr. Francis Preston, of Huddersfield, "On McCarter's Condenser without Air-pump for Steam-Engines." The writer stated that many attempts, with varied success, had been made to introduce a condenser without an air-pump, but he believed there had been no successful application of a condenser without the aid an air-pump, and capable of lifting its own injection water, previous to the one which formed the subject of the present paper. The construction and working were then explained by a number of diagrams. The condensers had been successfully at work upwards of three years, in conjunction with engines from 12-in. cylinders to 37 inch cylinders, giving every satisfaction, effecting a considerable saving in coal, besides giving much steadier motion to the machinery, caused by the regularity of the working of the condensers, without the great strain being put upon the engine through the ordinary air-pump at every revolution of the engine. Illustrations were next given of the successful applications of the condensers. In one instance it was stated that the engines had done more work in the mill than in any other month, with a regular speed and with greater ease, besides saving fuel in money value amounting to 33 per cent. The paper concluded with reference to a recent calculation made by Mr. James Wood, engineer, of Burnley, in which a comparison was made as to the relative volumes of steam expended in the working of an ordinary air-pump and the McCarter condenser, in an engine at Messrs. Crossley and Sons' Albion Mills, Halifax. Mr. Wood's report showed that there was a difference of 1161 lbs. degrees of heat in favour of the condenser, or equal to 25 per cent., a percentage which must not be considered as showing the whole economical advantage which existed over the ordinary air pump.

After a brief discussion, a paper by Mr. Bernard P. Walker, of Birmingham, was read "On the Frisbie Fire-Feeder and Grate for Boilers and Furnaces." The object of this apparatus is to supply the fuel at the lower surface of the boiler and furnace fires, instead of at the upper surface. It was stated that the system of firing by inserting the fuel from beneath presented the following advantages:—1. The fire was not reduced in intensity by the cold fuel damping the flame when thrown on the upper surface of the fire, so that the evolution of smoke from this cause was completely avoided. 2. Each successive charge of fuel lifted up and most effectually poked the fire.—3. The cooling of the furnace by the admission of a large volume of cold air when the fire doors were opened for stoking was avoided.—4. A smokeless flame was readily attainable with a thick fire, although using smaller fuel than could be employed in ordinary furnaces, with a maximum intensity of heat. One of the furnaces had been in constant work for nearly four years at Spring Hill Rolling Mills, Birmingham, where it had proved thoroughly satisfactory. Mr. Walker, in conclusion, stated that from 20 per cent. in steam engine boilers to 60 per cent. saving in cost of fuel in reverberating furnaces used for smelting nickel, had been effected by its use.—At the close of a short discussion, a vote of thanks was passed to the Chairman, and the proceedings in connection with reading and discussion of papers terminated.—The members of the Institution then made a visit to the Small Arms Factory, Small Heath; after which they dined together at the Royal Hotel, Temple Row.

On Thursday, a section of the members of the Institute visited Dudley and the neighbourhood. The party, numbering about 100, called *en route* at Sandwell Park Colliery, where they were received by Mr. Henry Johnson, sen., and Mr. Henry Johnson, jun., and shown over the surface of the colliery. The new engine just put down, at a great cost, was started for a few moments, for the first time, to give the party an opportunity of witnessing its action. The party then proceeded to Dudley per rail, and from the station to Lord Dudley's celebrated Lye Cross Pits by omnibus. At the colliery situated in Rowley Regis, Mr. Edward Fisher Smith (Lord Dudley's principal mine agent) met the party, and welcomed them in the name of his lordship. He also introduced the party to Mr. Thomas Latham, the local agent, who has had the management of the sinking and laying out of the works from the commencement, and his son, Mr. Richard Latham. The party, in bands of eight, lost no time in descending what is, without exception, the finest coal pit in South Staffordshire. The parties were greatly interested by the admirable manner in which the magnificent plant has been laid down. The journey from the surface to the bottom, 280 yards, was accomplished in from 17 to 22 seconds. Mr. E. F. Smith afterwards entertained the company at a sumptuous luncheon (in the name of the Earl), at the residence of Mr. Rupert Smith, Turner Hill. After the meal, the usual loyal toasts were given, and Mr E. F. Smith gave "Success to the Institute of Mechanical Engineers," in which he spoke highly of the efforts of the society. Mr. Bramwell, who sat on his right, responded, and proposed in return "The Earl and Countess of Dudley." The toast was drunk with loud cheers. Mr. Bramwell also, in a very humorous speech, proposed the "Health of Mr. E. F. Smith," whom he described as a most able prime minister to the immense realm on which they sat. The toast was also drunk with cheering, and Mr. Smith responded. As the party left the tent to visit the Hailstone Quarry (Rowley Regis stone) they tendered a hearty and unanimous vote for Lord Dudley's hospitality. Later in the afternoon the party went from Dudley to Round Oak, where they visited his lordship's ironworks and furnaces. They were received and conducted by Mr. R. Smith Casson, and the gas-heated furnaces and the Casson Dormoy puddling furnaces fully explained.

ROYAL AGRICULTURAL SOCIETY—THE IMPLEMENT DEPARTMENT.

The annual exhibition of the Royal Agricultural Society, opened at Aston, near Birmingham, on Monday, has much of considerable interest in the implement department. The show yard, one of the best the society has ever had, is about 70 acres in extent, the implements filling several miles of shedding. There are nearly 400 separate exhibitors showing upwards of 6400 separate articles. There are very few novelties to be seen, but an excellent opportunity is afforded for judging of the relative merits of the machines of similar classes exhibited by different makers. The steam engines and hydraulic appliances shown by Messrs. Tangye Bros., of the Cornwall Works, Birmingham, are very attractive. The steam pumps adapted according to size for various uses, from that of boiler-feeders to fire engines and deep mine pumps, are mostly upon Messrs. Tangye's "special" principle, which is now thoroughly well known and appreciated. They also show a new implement—Tangye's Patent Compound Direct-acting Steam Pumping Engine (Cherry's patent)—for waterworks, main drainage, mines, docks, sewage works, and for all purposes where considerable power and economy of fuel are essential. Among the advantages of this engine are that the steam is used expansively, the cylinders are the shortest possible, there are no guides, shafts, fly-wheel, or eccentric.

The exhibits of Messrs. Hayward Tyler and Co. are not less interesting. They show a very handsome 8-horse horizontal engine, with variable automatic expansion, giving good regulation of speed; a deep mine pumping engine, with self-governing deferential gear, working at 140 lb. water pressure; a large portable irrigation engine, which did good service last year at Burton in clearing the flood water from the cellars of one of the large breweries: and an American novelty in the shape of a hot-air engine. The latter engine—the Ryder engine—is worked entirely by the alternate heating and cooling of air, and has a nominal half-horse power. It is applicable to any purpose for which limited power is required; it is equal to pumping 700 gallons per hour to a height of 90 feet; is perfectly safe; and as there is a large demand just now for engines of small power it will doubtless obtain a large sale. The stand occupied by Mr. H. R. Marsden of Leeds is, of course, occupied by stone breakers, of which there were three. The larger of these is an improved Blake's stone breaker, on wheels, of the same pattern as that employed by the Birmingham Corporation. Since the purchase of the Corporation machine, however, improvements have been made in the cubing jaws, which may now be reversed or replaced upon the lower portions becoming worn, thus making them last longer. The form of the teeth has also been improved, to better fracture the stone.

In connection with the manufacture of iron mention should be made of the exhibit of Messrs. Clough and Co., of Stockton-on-Tees, as it contains, among other implements, a Clough and Ridealgh's patent rabbling puddling machine. This machine is intended to be applied to double furnaces. It is erected upon the top, and attached to a laterally-oscillating beam are two arms, which hang one in front of each furnace mouth. These arms are attached to the rabbles, which are moved backwards and forwards in two directions, just as they would be by manual labour. A large number of these machines are in use in the North of England, and one is also in operation at Messrs. Lee and Bolton's, Stourbridge. Messrs. Newton, Chambers, and Co., of the Thorncliffe Works, Sheffield, exhibit two kitchen ranges and a patent automatic machine for drying night-soil and other matters, together with mills for grinding manures. The drying machine, which combines mechanism with heating arrangements, may repay the attention of sanitarians. It can be fitted with an apparatus for destroying any fumes from excreta, and when so furnished would form a desideratum in many public nightsoil departments. Messrs. Burrows and Stewart have a varied show of implements, consisting chiefly of portable steam engines of various powers, thrashing machines, vertical engines, hay and straw elevators, &c. All are of very improved make, and are exceptionally effective in their operation. An excellent display of portable and vertical engines is made by Messrs. Davey and Paxman, of Colchester, and they also show a novel and simple water heater, which is well worth inspection.

Root's Safe and Sure Boiler is exhibited by the Patent Steam Boiler Company, of Birmingham; it is claimed that by ensuring perfect circulation of the water in the boiler he effects saving of fuel, and renders explosion impossible. In connection with steam engines, reference should be made to the exhibit of Messrs. Ransome, Sims, and Head, consisting of their Head and Schemioth's patent straw-burning engine, for burning straw, reeds, cotton, maize, mustard stalks, sugar-cane refuse, &c, as well as coal or wood, fitted with a new patent automatic expansion governor. They also show an 8-horse power expansion engine, with double slides, double pump, and feed-water heater, capable of developing nearly three times its nominal power, and consuming only about 4 lbs. of coal per horse-power per hour. There are, in addition, two of Messrs. Ransome's ordinary engines of 6 and 8-horse power, which appear to be thoroughly good and serviceable, and well adapted for everyday work of the farm. Messrs. Foster and Co., of Lincoln, show an 8-horse power steam-engine, fitted with double expansion valves, driving a thrashing machine, to which is attached an improved smutter and screen. Messrs. Wallace and Stevens, of Basingstoke, have several very good portable engines, the chief characteristic of which is that they are fitted with an enlarged fire-box for wood fuel, and a cleverly arranged water heater. Their thrashing machines also possess many improvements. Mr. E. Humphries, of Pershore, shows a variety of thrashing machines, with double blast finishing apparatus; some excellent horizontal and vertical steam engines, and a variety of articles useful to the farmer.

The Pulsometer, which revives a notion two centuries old for the raising of water, is well represented in the exhibit of Messrs. Hopkin and Neuhaus. It would be satisfactory to know the quantity of water lifted 1 ft. high by the consumption of 112 lbs. of coal, when this apparatus is used in order to compare it with the Cornish engine. In estimating cost it would, of course, have to be considered that no engine is used with the pulsometer, but the test experiments should certainly be made. The invention is more fully described in another column of to-day's Journal. The Beverley Iron and Wagon Company, at Stand 315, have on exhibit some high-class portable steam-engines in operation, and several thrashing and finishing machines of excellent quality. Messrs. W. and S. Eddington and Co., Chelmsford, show a portable steam-engine and a thrashing machine; and at the next stall,

Messrs. Nalder and Nalder, of Wantage, Berks, display 4, 5, 6, and 8-horse power thrashing and finishing machines of their well-known make. Messrs. Brown and May, of Devizes, have a number of high-class portable steam-engines. Messrs. Robey and Co., of Lincoln, have a first-class show of machinery. Amongst their latest inventions may be mentioned the Robey traction-engine. The chief merit in this locomotive is that the working parts are supported independently of the boiler, and thus much strain is avoided. In addition, the firm show some good fixed and portable engines, with many improvements, and an excellent single corn-mill. Messrs. Turner, of Ipswich, show a vertical engine, fitted with their improved regulator, consisting of a governor, which is combined with a starting valve, acting as a throttle valve. This governor acts and reacts instantly on the steam supply, and ensures regularity of speed, and economy both in the use of steam and in the consumption of fuel. Messrs. Piercy and Co., of Broad-street Works, Birmingham, have, in addition to twelve very excellent steam-engines, which are shown in operation, a large Cornish boiler in use, to the furnace of which is affixed a patent stoker of very peculiar kind. The fuel is placed in a hopper on the exterior of the boiler, and thence it passes through a crusher, and on to two horizontal plates, which are so moved as to lightly scatter the fuel over the entire surface of the fire. Thus the opening of the furnace-door is rendered unnecessary, and an even and perfect combustion is secured, there necessarily being an avoidance of smoke. The "stoker" possesses other advantages, not the least of which is that of effecting economy.

The principal exhibits of Messrs. May and Mountain, of Birmingham, are the patent direct acting steam-pumps, invented by C. T. Colebrook, and manufactured by the exhibitors. The power of these pumps is, of course, proportionate to their size, but it may be stated that one of them, with a 4-in. steam cylinder, a 2½-in. water cylinder, and 18 in. stroke, will raise 700 gallons per hour, the traveling speed of the piston being 110 ft. per minute. This pump stands on a space of 5 ft. 4 in. long and 18 in. broad. The construction is extremely simple, and the working parts are very few in number. This firm also show a six-horse power vertical boiler with a small pump, upon the same principle as the larger ones, applied as a boiler feeder. Mr. S. Lewin, of Poole, exhibits a handsome little engine of a class that has proved very efficient in use, and has given great satisfaction. Messrs. J. Evans and Sons, of Wolverhampton, make a large display of hand-pumps—the largest in the ground—and they also show three sizes of their reliable steam-pumps, especially adapted for farm use. It has only one valve, and its action is reversible, so that if, in pumping manure or sewage, the suction pipe should become choked a moment's reversal of a handle will cause the obstruction to be expelled. Messrs B. and S. Massey, Openshaw, Manchester, show half a dozen steam-hammers of small size, especially adapted to the use of engineers and agriculturists. These hammers are Messrs. Massey's specialite, and are both self acting, and hand worked. Centrifugal pumps are shown by Messrs. Williamson Brothers, of Kendal, and by Messrs. Tuxford and Sons, of Boston. Messrs. Ward and Co., of Great Bridge, exhibit improved mortar-mills, in which the most noticeable feature is a very effective contrivance in the shape of independent spindles to each roller for the purpose of avoiding the irregular strain and uneven wear occasioned in older mills in consequence of the rising of the rollers over hard substances. It is claimed that the wear and tear is not more than a tenth of that in mills of the ordinary construction.

Messrs. T. Bradford and Co., of Salford, show in action a variety of their washing machines, including a steam-washing machine capable of washing 200 shirts at a time, and another of a quarter the size, and also a radial drying closet. The latter is exhibited in operation, and its noticeable features are its rapidity and great economy of fuel. Messrs. Bradford likewise show a steam-box mangle, and a steam calender for ironing fine articles, such as tablecloths. Mr. W. G. Bagnall, of Castle Engine Works, Stafford, shows a new brickmaking machine (Stubb's patent). This machine is intended chiefly for impure and stony clay, and will turn out about 18,000 pressed bricks per day, the press requiring only two lads, one to feed and the other to remove the bricks. On the same stand are three stationary engines and some steam-pumps, to the construction of which considerable thought appears to have been given. A good collection of the emery wheels manufactured by the Mitchell's Emery Composition Wheel Company, Manchester, are exhibited. The object of these wheels is to do more rapidly various operations for which files are now used, and effect considerable saving in time and materials.

The patent self-acting feed apparatus attached to the engines exhibited by Messrs. R. Hornsby and Sons, of Grantham, are well worthy of attention; and Messrs. Marshall, Sons, and Co., of Gainsborough, display many attractive novelties. In the first place, they have a greatly improved traction-engine, fitted with steel gear. The portable engines are of a very improved kind, one being fitted with a patent variable expansion apparatus of much cleverness and effectiveness. Their thrashing machines have reached a high stage of perfection. Messrs. Clayton and Shuttleworth, of Lincoln, as usual, make a conspicuous show. Their steam engines are of the well known improved kind, whilst the perfect operations of their thrashers and elevators are widely appreciated. In addition they display a cleverly-contrived "chock," for adjusting the wheels of thrashing machines. Messrs. R. Berryman and Co., Birmingham, show a portable engine of 2-horse power, a donkey steam-pump, and Berryman's patent universal expanding tubular feed water heater. This heater avoids the disastrous results of grease in steam boilers, and increase their safety and durability. It makes a saving in coal of 20 per cent. Mr. J. C. Scott, of Manchester, shows his wheel-moulding machines, which are worthy of special attention from engineers and ironfounders. This machine is for the purpose of forming the moulds for casting cog wheels, and the nicety of its adjustment and mathematical accuracy of working render it a thoroughly artistic production. The machine is adapted to mould wheels of all descriptions, up to 8 ft. diameter; it entirely dispenses with change-wheels, pentagraph plates, prime numbers, and back-lash, and is applicable for wheel-cutting, wheel dividing, and setting out of circles.

MINING AND METALLURGY AT THE AMERICAN INTERNATIONAL EXHIBITION—No. II.*

NORWAY embraces iron, nickel, cobalt and silver in its metallurgical contribution. The impressive feature is a trophy erected by the Cathrineholm Iron Works, representing an ancient ship or "viking," the prow and deck being of plate iron, and the mast and the spar are formed of hammered bars of various sizes. On either side of the mast are ladders made in imitation of rope of knotted and twisted bar iron, bent cold to show its elasticity and strength, and they are really remarkable. On the deck of the "viking" a mailed officer stands with a club in hand made of knotted and twisted iron; behind him is a cabin composed of a pile of various sized hammered bars, and in front of him are heavy anchor chains. The get-up of the affair is worthy of notice, and is a novel way of illustrating the product of the works. Around the hull there is quite a collection of projectiles, while to the sides of the vessel are hung round shields, ornamented with nails, spikes, punching &c. Behind the vessel is a case of various sized nails and spikes. Raw and calcined nickel ores and the products of them are displayed by the Bamble Nickel Works and the nickel works of Ringenget, and the Kongsberg Silver Works exhibit a large collection of argentiferous rocks, native silver, models of nuggets and ingots, which are quite interesting. There are several fine geological maps and sections, and a number of specimen of the different rocks are exhibited in connection with the maps.

BELGIUM contributes some interesting features of mining and metallurgy, but the display is not as comprehensive as might be expected from a country producing more than one-fifth as much iron and one-third as much coal as the United States. The most prominent feature of the mining display is in Machinery Hall, and consists of an apparatus employed by Mons. T. Chandron in sinking coal shafts. This is simply an artesian well boring apparatus on an immense scale, and is composed of the following parts:—A trepan weighing 15 tons, made of forged iron, and fitted with cutters secured by taper keys, so as to make a cut 6 ft. long. This trepan is raised about 3 ft. by steam-power and then dropped, at each lift the rod being turned so that the tool cuts out a circle 6 ft. in diameter. This sized tool has penetrated in the softer sandstones one metre per day. A massive iron bricket, or saw pump, fits into the cut thus made, and is used when the tool is withdrawn to remove the debris. After the first tool has penetrated about 30 ft. the second trepan is substituted. This is a tool constructed similarly to the first, but is much heavier, and is 16 ft. long, with a central guide working in the opening made by the first trepan. This tool has followed up the first tool at the rate of a foot per day. The presence of water does not interfere, but rather is an advantage in boring the hole; and for the purpose of recovering the tools or cutters if broken there are three tools on exhibition—A grapple for broken rods, a sweep to catch the sections of lifting bars, and a grapple to remove broken cutters or troublesome cutters. This latter is a remarkably ingenious invention, and consists of a pair of double lazy tongs, so arranged that when lowered the arms stretch to the sides of the hole, and when raised they scour the bottom, and pick up the troublesome cutter or stone. To prevent breakage, the trepans have a sliding motion on the suspending bar, thus permitting the shock of striking to be expended without injury. When the cutting is ready for lining, circular plates are let into the opening, the bottom plate or cylinder sliding inside of the second ring, and being surrounded with a moss gasket, which is compressed between the flanges, forming a means of keeping water out at the bottom. The second ring is provided with a convex bottom, and it, therefore, floats on the water. As ring after ring is added the water is allowed to escape, so as to permit the rings to sink gradually. Suitable guides keep the casing from tilting until it is finally secured upon the hard impervious strata, when the shaft is pumped out and is ready for use.

Adjoining the Chandron apparatus is an interesting exhibit of the rock-drilling car of Mons. Dubois et Francois, which was used largely in the St. Gothard Tunnel, and also employed in the great bore at Mont Cenis. It is a compact arrangement of four independent drills, operated by compressed air, placed on a carriage, and provided with proper facilities for vertical and lateral motion, and also for rotating the drills. A model of a safety-cage for mining shafts, and some iron sills for mine railways, also form a part of the Belgian mining exhibit. These sills are flat iron bars, bent so as to form chairs for the rails at the proper gauge, the rail being secured by simply driving a wooden wedge between it and the bent portion forming the chair.

In the main exhibition building there are some fine specimens of argentiferous lead ores yielding over 80 per cent. of lead. The rest of the metallurgic display consists of sections of beam, channel and angle irons, wrought iron riveted girders, axles, rails, nails, spikes, tacks, and wire. The usual exhibition of toughness by twists and bends is not overlooked by the Belgian contributors, and one display of beams, &c., has on top of the case in large letters "delivered free on board in New York for $40 per ton." Some of the plate iron on exhibition displays remarkable qualities, and a rack of sheet iron is to all appearances equal to the Russia sheet.—*Iron Age* (New York)

* No. I appeared in the Supplement to the *Mining Journal* of July 8.

THE FAIR OAK COLLIEY, CANNOCK CHASE.

The recent discovery of coal on this estate by boring will, no doubt, render the following description of the operations and prospects of the company interesting to many of our readers:—

The property of the company, which has a nominal capital of 200,000*l*., consists, according to a scaled computation, of 5437 acres, but in all probability, if an actual survey were made, of at least 6000 acres of the mines of Cannock Chase, which are held under lease from the Marquis of Anglesey for a term of 60 years from October 10, 1871. The surface area extends from the Walsall and Rugeley Railway on the south-east to Milford, the extreme northern boundary of Cannock Chase, on the north-west—a distance of over 5 miles in length, and it averages about 3 miles in breadth. It is thus by far the largest of the colliery properties in Cannock Chase, and in this respect is probably exceeded by few, if any, actual coal-producing concessions in Britain. At a point near the proposed new pumping station of the South Staffordshire Waterworks Company the four undermentioned colliery estates meet—the Brereton, Cannock and Rugeley, West Cannock, and Fair Oak, the two latter occupying the whole of the Chase belonging to the Marquis of Anglesey on the west side of the Walsall and Rugeley Railway, and bounding each other from Moor's Gorse to Cannock Thorn on the Old Penkridge road.

The first sod of the Fair Oak sinking was turned on Jan. 1, 1872, by Major Arden, of Longcroft Hall, and from the first 10 yards the difficulties which have so pertinaceously beset the sinking operations of the company began. The strata through which the pits were to be carried consisted of the conglomerate division of the Bunter sandstone series, and these, instead of being in their usual more or less friable condition, were found converted into concrete of the hardest and most conglomeritic description, by the remarkable introduction, as the cementing material, of a very high percentage of carbonate of lime, manganese, iron, copper, and lead. These conglomerates were 94 yards in thickness, and more or less fissured on one side of the shaft from the top to the bottom, thus allowing, almost without intermission, the free passage of the water with which the Bunters are always so heavily charged into the shaft as it was proceeded with, and necessitating the erection from time to time of additional pumping machinery to raise it. The shaft, which is 15 ft. in diameter, was carried down through the Bunters by ordinary hand steel drills, with dynamite as the blasting agent, powder being found to have scarcely any effect upon the strata, and it will be gathered how long and how numerous were the delays which from a variety of causes accompanied the sinking and casing of the shaft, when it is understood that nearly 15 months were consumed in reaching the base of the conglomerates.

The conglomerates, which have a slight westerly dip, were found to be succeeded by a series of red, purple, greenish, and variegated clays, and marls, containing large nodules of hematitic ironstone, and followed by alternating grits, white, brown, variegated, curiously laminated, and at times highly ferruginous sandstones, containing both animal and plant remains, all lying comformably together and dipping south-west at, for the Chase, the extraordinary angle of 75°. The sinking of the shaft was continued through these varying strata to a depth of about 80 yards below the Bunters, when it was considered advisable to bore from the bottom of the shaft; and boring operations were accordingly commenced on June 18, 1874, and continued till August 5 following. The distance bored was 141 yards, and the strata proved consisted of, first, a sandstone rock, which ultimately turned out to be 12 ft. thick, and the basement bed of the water-bearing series, followed by alternating red marls, dark clunch, and clod, and mingled rook, together 22 yards; and succeeded by strata of the ordinary coal measure description, consisting of binds, shales, clunch, clod, peldon, rock, ironstones, thin coals and smut, and fire-clay; but at 166 yards beneath the red marls again made their appearance, associated with dark clunch and stone binds, and further boring operations were in consequence suspended. The borings, however, showed that beneath the sandstone first struck, 167 yards from the surface, there was no water, and it was accordingly arranged to carry the shaft through this bed, which was the first met with in the sinking of sufficient solidity and thickness to support with any degree of safety the tubbing with which the shaft had been so far cased. The rock in question consists of a remarkably compact crystalline sandstone, but although of the thickness named it from the high angle at which it dipped, was passed through on the crop side before the top part of it was reached on the dip, and consequently a few feet of the foundation of the kerb for the tubbing consists of a wall several feet in thickness of solid brickwork. The shaft, therefore, is now cased with iron tubbing down to a depth of 175 yards, the necessity for which arose from the fact that large quantities of water were found in the strata which came beneath the Bunters, and followed the sinkings down to a depth of 167 yards from the surface, where the first and only opportunity offered itself for effectually dealing with it. The raising of the water then met with, which at one point in the shaft, 85 yards from the surface, consisted of 750 gallons per minute, fully employed two engines and four sets of pumps. From the base of the tubbing, which was completed in March, 1875, a relief pipe was brought up to and connected with a cistern in the shaft, 85 yards from the surface, from which water to the extent of 100 gallons per minute was raised by the top lift of pumps, the bottom lifts being subsequently taken out.

Sinking operations were now resumed after the expiration of more than three years from the commencement, and the shaft was carried down to ascertain the character of a seam of coal which the borings showed to exist at 243 yards from the surface. The sinkings were, however, no more successful than the borings, except to show that the coal had not thickened, but that it was underlaid by a bed of excellent fire-clay similar to the Stourbridge clays. The shaft, however, was continued a further distance of 28 yards, and a heading then started across the measures to the south-west, which at 43 yards cut the coal and fire clay, and then two heads at right angles to it were carried, the one to the south-east 45 yards, and the other to the north west 44 yards, in neither case, however, resulting in any improvement in the coal, but showing, nevertheless, the important fact that the rate of of inclination of the measures had, in the distance, decreased by about one-half in this direction.

Shortly after the commencement of the head boring operations were recommenced from the bottom of the shaft, and at 320 yards from the surface a spring of salt water was tapped, which yielded from a bore-hole 1¾ in. diameter 33 gallons per minute. Before this, however, and soon after commencing, coal gas, which burnt freely with a bright yellow-tipped flame, and was smokeless, made its appearance, and gradually increased in quantity as the hole descended. At 328 yards, and in ground beneath red marl, the character of which was not ascertained, a spring of fresh water was tapped, which, together with the salt water already met with, rushed up the bore-hole even while the rods were in it, at the rate of 4000 gallons per hour, and as this quantity was too great to be dealt with except by pumps, and as it interfered with both the headings and borings, the hole was plugged and all operations were suspended on Dec. 1, 1875—or within a month of four years from the the commencement of the shaft. And thus, after so long a period, during almost every day of which delays of a more or less serious nature from some cause or other occurred, the pumps were stopped and the shaft allowed to fill with water, which it did three parts of the distance in six days and the remaining parts in seven days, up to the natural level 11 ft. from the surface. Fortunately no fatal or very serious accident happened to anyone connected with the sinkings.

Geologically the strata have been proved at this particular point on Cannock Chase to a depth of 328 yards—251 yards proved by sinking, and 77 yards by boring—the strata of the latter consisting of alternations of binds, clunch, rock, and red-clay, with marl and mingled ground, and the proving further shows the situation of the shaft to be a ground disturbed in a most remarkable manner, and in fact presenting conditions which have never before been found associated with any originally-introduced mining operations on Cannock Chase. What those conditions are it is not the intention now to discuss, nor indeed is it necessary, as they will be dealt with in a forthcoming publication on the "Geology of Cannock Chase." It is only necessary to say here that they are geologically of a most important and interesting description, and that to their existence is due the non-discovery of coal where coal was expected to be found, and the delay which must necessarily follow before the present shaft can be utilised as an outlet for the coal, which there is but little doubt lies within a distance of from 200 to 400 yards on either side of it.

Previous to the closing of the sinkings and borings a spot had been selected for the boring, 1½ mile distant to the west, near the Fair Oak Tree, on the Penkridge-road, running across the Chase, and in May, 1875, borings by hand to prove the thickness of the Bunters and the position of the coal there were commenced; and at the date in question—December, 1875—they had been carried down to depth of about 100 yards through the gravels and just to the level of the underlying yellow sandstones. These borings were simultaneously with the other works suspended while, and for the reason that, negociations were being carried on between Lord Anglesey and the company for such a modification of the terms of the company's lease as would meet fairly and equitably, and be equivalent to, the altered circumstances by which the operations of the company had become surrounded. The negociations were finally completed on this basis, and on March 11 of the present year borings were resumed near Fair Oak Tree, and arrangements made to carry down other bore-holes not far from the shaft. One of these latter is being pushed on night and day through the Bunters, at a point about 800 yards south-west from the shaft, the object being to prove the depth at which the deep coal lies before interfering in any way further with the present shaft. About midway between this boring and the shaft there are, I believe, two large dislocations, running nearly north and south, with a westerly downthrow, which bring in several of the Cannock Chase seams of coal, including the shallow and deep, and there is not much reason to doubt that the latter will here be found at about 240 yards from the surface.

Shortly after the resumption of the borings near the Fair Oak Tree the base of the Bunters was reached (March 25) at 109 yards, and the upper coal measures proved to come immediately beneath. These, which consisted of red, purple, and mingled marls and clays, led on to a coal 1 ft. thick at 119 yards, and were followed for a short distance by somewhat similar ground, which gradually passed into ordinary clunch, binds, and shales down to 137 yards 2 ft. from the surface, when (April 19) a coal 5 ft. 6 in. was cut, and the geological position of measures reached conclusively established. The borings were thereafter continued through the usual description of strata, with thin coal seams and ironstone here and there, down to a coal at 186 yards 2 feet 2 inches from the surface, which consisted of the following section:—Coal, 1 ft. 10 in.; black parting, 3 in.; coal, 3 ft.; parting, 6 in.; coal, 3 ft.; and which there is no difficulty in recognising as the "Old Man's Coal." A few feet below it was found a band of ironstone 5 in. thick, and below it, followed by ground consisting principally of binds, to a depth of 208 yards 1 ft. 6 in, the following:—Coal, 1 ft. 6 in.; parting, 3 in.; coal, 4 in.; fire-clay, 1 ft.; rocky fire clay, 1 ft.; coal, 3 ft. 6 in. Fire clay and rock binds, when at 209 yards 1 ft. 6 in. from the surface, were come upon, and on the 29th ult. boring operations ceased.

This last group of coals commences at 16 yards 0 ft. 10 in. below the Old Man's coal, and the position of the first seam corresponds with the usual section of the Chase measures, but, taking the group together, the seams are divided by a less thickness of ground than is found to be the case at Hednesford and one or two other places. The thin coals found on the Chase, and in fact the intermediate strata with which they are associated, seldom or ever correspond in number or thickness between the fixed coals, in whatever district they may be pierced. An additional number of seams of these thin coals, their increased thickness, their partial or even entire absence from their usual position, are matters which, in a geological sense, have no influence whatever upon the existence, thickness, quality, or general condition of the fixed and identified coal seams by which the Cannock Chase section is determined. The result of these borings, therefore, is to determine conclusively enough for all practical purposes, that at this particular point the whole of the Cannock Chase series of recognisable and workable coals exist beneath the Old Man's coal, and their existence is without doubt accompanied by the usual thickness, quality, position, and condition of those coals found elsewhere. It is a matter well known in connection with mining operations on the Chase, that where any one coal has been struck, and its position identified as overlying however much or little in point of distance the Shallow and Deep coals, the further proving of those coals except by actual sinking is not considered necessary; and this is a course arrived at from the simple fact that they are always found, even if at times occupying a somewhat varying distance apart, to be possessed of those characteristics in regard of thickness and quality which, combined with costlessness in working, make them so valuable to the producer and so largely sought by the consumer.

The coals which underlie the "Old Man's Coal," and which from the fact of their having been and still are in different localities being worked, are nine in number—some of which are more or less adapted for every purpose for which coal is required—and represent a total thickness of 45 feet of solid coal. Whether or not the whole of these will ever be worked here or over the Chase generally is a question which time and circumstances will alone answer. At present, and this will no doubt be the case while they last, the efforts of the producer are confined principally to the deep and shallow seams, which are at the same time the deepest and the most valuable of the Cannock Chase series. To reach these the whole of the others have, of course, to be passed through, and this operation affords the opportunity for ascertaining exactly their quality and thickness, and also all other serviceable particulars of the different ironstones and fire-clays with which they are associated, for future information. The deep and shallow coals are naturally enough, from the enormous quantities raised, becoming day by day reduced in extent, and when exhausted, as must eventually happen sooner or later, according to the demand made upon them, the next best coals will either have to be fallen back upon or those seams followed at a considerably increased cost of production to the west, north, and east, beneath newer formations, and stretching far beyond the present manorial boundaries of the Chase. In either case the area thus known will no longer retain its exclusively valuable mineral character, but this, nevertheless, is a condition which will require the advent and departure of more than three, or four, or five generations of colliers to bring about, even if their efforts result in producing double the present quantity of coal raised for consumption, there being at least 300,000,000 tons of the deep and shallow coals alone lying untouched within the area of Cannock Chase, and consequently there need be no fear, for the present at least, of the decline of the country or the depopulation of the district for the want of fuel.

Returning, however, to the subject more immediately under consideration. Between the point known as Deakin's Grave (about three quarters of a mile north-east of the West Cannock, No. 1 plant) and the Fair Oak borings runs a fault of little less than 200 yards downthrow to the north. This is evident in the fact that at Deakin's Grave the Brooch coal, which occurs at the West Cannock pits at 35 yards from the surface, was reached in a well sinking at about 20 yards, and merely covered up by draft sand and gravel. At the Fair Oaks borings there were 1·9 yards of Bunters, 77 yards of coal measures down to the "Old Man's Coal," and it is 15 yards below that seam to the geological horizon at which the West Cannock pits commenced—the Brooch lying about 50 yards below the latter seam, thus showing a difference in the level of the coals at the two points of fully 200 yards. This being the case it follows, as the Brooch coal lies on this side of the Chase, at about 260 yards above the Deep coal, that the latter coal will be proved at the Fair Oak borings at from 480 to 500 yards from the surface. The occurrence of this fault is, therefore, primarily of the greatest importance, inasmuch as to its existence is due to the preservation and favourable condition of the strata to the north, west, and east. The general dip or sweep of the Cannock Chase measures is westerly, but in numerous local cases where approaching faults the dip varies with every point of the compass. The dip of the coal in the West Cannock pit, approaching Deakin's Grave, is south-west, and rising, therefore, north east towards the fault in question. Had there been no dislocation between the two points, and the inclination of the measures maintained, both the Deep and Shallow coals would have here lain within 160 yards of the surface; and if the Bunters had instead of by a fault been brought in by a gradual overlap the basset of those coals into the overlying beds would shortly have taken place, and the coals themselves have become the conductors to so large an extent of the water contained in the Bunters as to render mining operations if not impracticable, at least impossible without the erection of very powerful, and, therefore, of course, costly pumping machinery, and which even of this character would be liable to be overpowered at any moment.

The borings, therefore, show:—Firstly, that in this, the most northerly point of the Cannock Chase area where coal has been discovered, the coal measures are intact from top to bottom; secondly, that they are succeeded by the Bunter sandstone and Pebble beds, without the interposition of the so-called Permian of the more southerly parts of the field; and, thirdly, that this condition has been in no way interfered with subsequently by any denuding agency. There is no other section on the Chase which, taken geologically, illustrates in so clear and interesting a manner the original relation of the coal measures with the overlying New Red Sandstone, nor has any other yet been met with where the coal measures have not been upheaved, and more or less subjected to denudation, both previously and subsequent to the deposition of the Bunters. These are facts of the greatest importance, and they bear most intelligibly upon the question of the prolongation and gradually increasing development of workable coal beneath the Triassic rocks in this direction—a question which will eventually be solved in the discovery that in this northern area of the South Staffordshire coal field that thick mass of red, brown, and purple rocks and marls which, up to Essington on the one side and Aldridge on the other, are held as Permian, are absorbed by, or, more properly speaking, pass into and are represented by the few feet of "red and mingled ground" which immediately succeed and come between the Bunters and the first coal; that this condition obtains generally in this part of the Chase, and that there is lying within its surface boundaries on the west side of the Rugeley and Walsall Railway a virgin coal field many thousands of acres in extent, of which the Fair Oak Company may be sure of possessing at least 5500 acres, containing the whole of those valuable coal seams already enumerated, and in the presence of which rests the origin of numerous and growing centres of mining and manufacturing industry, and the congregation of a population to be reckoned by thousands.

—*Staffordshire Advertiser.* WILLIAM MOLYNEUX.

NEW PUMPING PROCESS.—A novel experiment was commenced on Friday with the 80-horse power engine in Portsmouth Dockyard. It was with a new pumping process, by which the inventor, Mr. R. M. Marchant, of Hatton Garden, undertakes to return saturated steam to the boiler of any engine, instead of condensing steam from the condensers. In other words, after the steam has exerted its power in the cylinder, the manufactured article itself is to be taken up and re-pumped into the boiler so to be used afresh. Mr. Marchant claims for his invention that he is able to re-pump steam into the boiler without any expenditure of fuel beyond that which is required to overcome the more friction of the pumps, and without subjecting them to pressure. The inventor contends that by the law of gases the pressure exerted by steam on one side of the piston represents by its elastic power, as in the case of the resistance of a spiral spring, the same expression of power in pressure on the other side of the piston; so that the elastic charge is always ready to give back the exact power expended to the purpose of its expression. Consequently, if Mr. Marchant's reasoning be correct, he expects to be able to return in volume and pressure to the boiler the equivalent of the power expended on the pumps, and so to apply the steam again to power. It, therefore, follows that, inasmuch as returning boiling water into the boilers saves the cost of re-boiling it, to return steam into the boilers as steam will save the far greater cost which is expended in manufacturing it. As steam cost 75 in the 100 of the fuel which is consumed in its production, the saving which will be effected by the successful application of the principle will be great.

ELECTRICITY AND GOLD.—Mr. Henry Marshall, of Penrice, Angaston, writing to an Australian paper, says—"You published a letter of mine last year from the London *Mining Journal* 'On the Development of Gold by Electrical Agency;' and in reference to this I will mention that there are some specimens of quartz crystal (transparent ones) in the Melbourne Mining Museum containing gold in the centre. When quartz is heated it loses its transparency and becomes opaque; therefore, how was this gold formed in such circumstances? At our Lady Alice Mine gold is found in sulphuret of copper. Heat sufficient to produce gold from a base must have dissipated the sulphur, as in the process of roasting copper ores of this nature. Gold was found at Tarrengower in galena or sulphuret of lead, and in the Melbourne Museum is a specimen of malachite with crystals of gold embedded. How could heat have had anything to do with these? I have also seen a large piece of transparent quartz with tin ore in the centre, and I have a similar specimen with crystals of sulphuret of iron or mundic in the centre. A friend in Adelaide sends me the following:—'A friend on the Victorian diggings was once at a place where numerous holes had been sunk with very poor results. He made a pile at another place, but before leaving he went to look at this place. It was on the foot of a hill. On walking up the hill he noticed a tree which had been struck by lightning; at the foot some quartz cropped out, and this showed the stroke, being split. He took a fancy to try the ground at the foot of the hill, in a line with the tree and rock, and the result was he took out 2 lbs. weight of gold to a bucketful of stuff. He said he supposed the lightning had something to do with it.' The largest nuggets in Victoria have been found in a peculiar kind of red ferruginous clay, with no small gold about; and in the Ural, when the miners find a large lump in alluvial they abandon the spot, as they know they will not find any more. The production of copper crystals in moist clay, saturated with solution of sulphate of copper, with a galvanic current passing through it, as in Mr. Robert Hunt's experiment, has relation to this; and the crystals, octahedral of copper ore found in the Kapunda Mine, which

is in a mass of clay, gigantically fissile, seemed to have been formed in a similar way. I have been told that the telegraph office at Kapunda is rather troublesome through the electric disturbances, more so than any other place, and the earthquake shocks are pretty frequent in a line from Kaiserstuhl to Kapunda, and through the large district where I reside, and seem to take the line of the large mineral lode which passes through the Angaston district."

ECHOES FROM THE MINING MARKET.

Mining matters show little change, neverless more than one symptom is apparent that a turn in the tide of affairs may not be far off. Thus, East Van from about 5 has suddenly advanced to 9½, with a strong enquiry, and a new lead mining company, whose operations will be conducted north of the Tweed, is on the tapis. The adventure will be introduced under strong auspices, and no doubt the shares will soon stand at a handsome premium. We hear the capital is 120,000*l.*, with about 15,000*l.* for working, and that 250 tons of lead per month can be produced. At present, looking all round the markets, prices generally remain in favour of buyers, although many investments have been made during the week at existing tempting quotations—some to average higher priced holdings, others representing a first investment, now that sound shares can be got for a few shillings each.

The principal business of the past few days has been confined to lead and foreign mine shares. Copper, tin, and colliery securities have been almost totally neglected. Of the last-named description we have seen a few transactions in Thorpe's Gawber Hall, West Mostyn 12 per cent. preference, and Chapel House, and these, we think, have comprised the entire colliery business of the week. The first-named shares are 3¼ to 3¾; West Mostyn (pref.), 3 to 3½; Chapel House have been done at 2¼, and close at 2 to 2½, with shares offering.

To lead shares, Roman Gravels, Van, Glyn, West Tankerville, Pennerley, East Van, West Chiverton, and Tankerville have engrossed the most attention; of these Tankerville and East Van have been in strong demand. Van, 36 to 38, ex div.; Glyn, 3¾ to 3½; West Tankerville, 1½ to 1¾; ditto, preference, 1¾ to 2; Pennerley, 1⅛ to 1¼; East Van, 9 to 9½; West Chiverton, 17 to 18; Tankerville, 10 to 10½.

In the foreign share market the two principal events have been the rise in Richmond in consequence of the cabled week's run of 852,000—the highest return yet made—and the decline in Sweetland for the reasons stated in our last remarks. Richmond shares are now 9¼ to 9½, whilst Sweetland Creek have sunk to 2s. 6d., 5s. The Eberhardt Company have received silver bars to the value of 4000*l.* Advices have just been received by the Santa Barbara Company. The May results are as follow:—Estimated profit, about 580*l.*; value of produce, 1549*l.*; mine cost, 969*l.* During the month 171*l.* has been spent on capital account. There has been a slightly adverse change in the aspect of the lode since previous month. The shaft during May has been sunk 8 ft. 6 in. The lode in the north end of the shaft is 6 ft. wide, but much disordered by hornblende and quartz. In the south end, however, it is full 8 ft. wide, and producing fair quality stone. In the adit and No. 3 stope the lode is still 10 ft. wide, but the upper part of No. 2 stope is not looking so well, owing to an intermixture of hornblende and killas. During the month 1362 tons of stone were raised. Of this quantity 264 tons were rejected as refuse, and 1092 tons were put through the stamps. Average quantity of stone raised per borer for the month, 26·6 tons. Shares close 1⅝ to 1⅞. Birdseye Creek shares (in sympathy, we presume, with Sweetland, for the last advices showed a profit of 2250) have receded to 10s., 12s. 6d. Emma shares are quoted only 10s. to 12s. 6d. Javali are 5s. 6d. to 6s. 6d. Pestarena, 4s. to 6s. New Quebrada, 3¼ to 4.

Those of our readers who are interested in West Chiverton will be glad to hear that the profit made for the past quarter will admit of a dividend of 10s. per share. The actual profit, however, is considerably higher than this, for there remains the above amount after deducting 300*l.* for the testimonial voted to the secretary, 500*l.* for extra expenses incurred on dressing plant (which will enable the returns to be materially increased), and 775*l.* paid for renewal of leases. These items together amount to over 1500*l.* The sum that would be required for another distribution of 10s. to the real profit for the quarter has been fully equal to 1*l.* per share, and this from the mine that was said to be worked out, and to be only fit for the Stannaries Court! It is a remarkable fact that since West Chiverton has been managed from London offices 3s. have been distributed in dividends; the property has been improved both underground and at surface, whilst to all appearances many more dividends are in store for the adventurers. We are glad to find that the management are now devoting their energies to improvements in dressing. Two crushers (to which two jiggers are attached) are crushing 40 tons of stuff per day already, but another crusher is now being put up to which four jiggers will be attached. The stamps engine is of sufficient power to work another crusher yet, with four more jiggers. We hope to visit the mine shortly, when we may have some further information for our readers.

In copper shares business has been almost entirely confined to Parys Mountain and Wheal Crebor. The former are 13s. to 15s., the latter 2 to 2½.

The following comprises the chief news of the week from Cornwall. Mines generally took well, although business in shares is on a very restricted scale. Cook's Kitchen meeting will be held on the 27th instant, when a call of 10s. per share is expected. East Lovell has a good branch of tin in the eastern end of the shaft; westward the lode is rather disordered. The shaft is being sunk as fast as possible, and a productive lode is expected. At Old Treburgett the lode in the 90, south of shaft, is worth 9*l.* per fathom. In the 80 south the value is 8*l.* per fathom. In the level driving from No. 4 winze, under the 70, the lode is worth 20*l.* per fathom. West Frances meeting will be held on Thursday next, when a small loss is expected to be announced, and a call may have to be made. The shares are in a drooping condition. A dividend of 5s. per share has just been declared in West Poldice. Shares, 12 to 13.

The next Banca sale will be held on the 26th inst., when 29,000 slabs will be offered for sale.

With reference to our remarks last week on the extremely unremunerative state of the iron trade in the North of England, some grave complications have latterly been almost daily expected, and, according to the Yorkshire press, these were "likely to culminate in a disastrous financial crisis." We are glad to find, however, that at the last moment the difficulties have been surmounted. The concern in question, which is one of the largest in Cleveland, is to be converted into a limited liability company.

JAMES H. CROFTS.

THE WEEK.

SATURDAY, JULY 14.—The transactions consisted chiefly of very heavy purchases of railway stock to close late "bear" accounts, and prices rose very considerably, closing at the very best. British rose 2¼, to 91½; Brighton, A, 2, to 101½; Brighton (ordinary), 1⅜, to 116; Caledonian, 1½, to 119¼; and York, A, also 1½, to 134. The rise in the others varied from ½ to ¾ per cent. In foreign bonds Russian and Hungarian bonds were again in demand, Moscow Konisk had a nominal rise of 4, and Hungarian of 1871, 2½. The principal buying orders still come from Berlin and Vienna. Peruvians, 12¼ to 12⅝; Spanish, 13⅛ to 13¼; General Credit, 6¼ to 6⅝; Hudson Bay, 17½ to 17⅜; West Tankerville, 1¾ to 1⅞; Alamillos, 2¾ to 2½.

MONDAY.—A traffic increase for Brighton of 4459*l.* led to a further important rise in stock. The ordinary advanced 1*l.*, and the deferred 1⅞, to 103¾. The South Eastern Railway showed an increase of 1055*l.*, and the deferred stock rose ⅝ to 116¼, after being at one time higher. Sheffield, however, fell 1½, on a statement that the dividend is to be provided out of the telegraph money paid by the Government. Midland gave way at ⅞, and North British and North Eastern ¾. Cedar Creek, 10s. to 15s.; a profit of 85000 was made during the last month's run. E et Van, 7 to 7¼. Richmond, 8⅛ to 8¾. Glyn, 3⅝ to 3¼. Cape Copper, 35 to 37. Business in the foreign market consisted almost wholly of sales. Russian fell on the average 1½, Argentine 2; Buenos Ayres of 1824 dropped 5*l.*

TUESDAY.—Beyond a recovery of ⅞ in Sheffield to 68¼ the changes in home railways were nearly all for the worse; Brightons alone maintained yesterday's quotations. York A fell 1¼; North Eastern, 1¼; North British, ⅞; and Birmingham, ¾. All the changes proceeded mainly from an eagerness to take advantage of the recent rise. Russian Bonds were again pressed for sale all day, not only here but likewise at Berlin. The 1850 Loan was quoted 85 to 88, a fall of 2*l.* Nor-ty Gio, 23 to 26. Peisuli Coal, 8 to 6 dis. West Cumberland Iron, 11 to 9 dis. Mines were in good demand. West Chiverton advancing 10s. to 18s.; and West Tankerville and East Van 5s. each. Alamillos, 2¾ to 2½.

WEDNESDAY.—The railway traffics issued to day were not satisfactory, consisting chiefly of decreases; the increases were few and very inconsiderable in amount. Thus, Great Eastern had an increase of 17*l.*, Great Northern one of 113*l.*, and North British one of 647*l.* The North-Eastern showed a decrease of 2691*l.*, the Great Western one of 1303*l.*, and the Midland a decrease of 255*l.* The committee decided this afternoon to close the house on Saturday. Berwicks were down at one period to 155¼, but closed 1 per cent. higher. There were rumours that the company had large interests involved in the Great Northern concern, now believed to be on its last legs. The Great Eastern pays no dividend this half-year on the ordinary stock; a fall of 1 per cent. ensued on the announcement. Brighton A declined to 102½. East Van rose to 8¼, 9.

THURSDAY.—The Bank return to day showing a larger amount of bullion stowed away in the cellars than has ever been known before, imparted a strong tone to all the markets. Consols further advanced 10s. to 97. India Fives rose to 106, and Metropolitan Three-and a-half per Cents to 103. In the railway market, notwithstanding the late unusual rise, Brighton stock again led the way. The deferred stock rose 2¼ per cent. to 134¼, and the old stock 1*l.* to 118. On its transpiring that the difficulties of the great iron firm in the North would be privately arranged there was a strong demand for Berwick stock, which advanced to 157½, being 2¼ per cent. higher than the lowest point touched on Wednesday. Sheffield rose 1*l.*, the report showing that the accounts have been strengthened by some 7000*l.* received from Government, and not 20,000*l.* as before reported. Metropolitan, which, compared with Brighton, should surely be worth 110, advanced to 104½. British had a slight rise, closing 91 to 91¾. Caledonians left off firm at an improvement. Native Guano, 3⅛ to 3⅝.

FRIDAY.—Railways open with increased buoyance, Brighton A, being 108¼ to 108½; ditto ordinary, 118½ to 119; Dover A, 117¼ to 117½; Sheffield, 69¼ to 69¾; Caledonian, 120½ to 120¾; Berwick, 157 to 158; Midland, 128¾ to 129; Egyptians, 38¼ to 39; Peruvian, 12 to 12¼; Turks, 11 to 11⅛; ditto (1871), 16½ to 17. *Two o'Clock.*—The Brightons are slightly easier, but Berwicks are 158½ to 158¾; Midland, 129¼ to 129½; Sheffield, 70¾ to 71; Dover A, 118 to 118¼; and Caledonian, 120¼ to 121. Consols have given way a quarter. Eberhart, 8⅜ to 8¾. *Four o'Clock.*—Consols, after falling to 96½, have now recovered to 97, and the markets close very firm. Midlands being 129½ to 130; Great Western, 106 to 106¼; York A, 134 to 135; and British 91¼ to 92. As mentioned above, to morrow will be a holiday.—*Birchin lane, July 21.*

R. FERDINAND KIRK.

MINING NOTABILIA

[EXTRACTS FROM OUR MINING CORRESPONDENCE.]

ST. AGNES CONSOLS has been bought by a large number of shareholders in the late company, who are now energetically working the mine under the new title of New St. Agnes—a change of name being rendered necessary by registrar's requirements. The new board of directors is a very influential one, which will command confidence, and the shares will be privately subscribed—so many, indeed, as may have to be issued. The success of this enterprise is attributed to the prompt and energetic action of Mr. John B. Reynolds. We shall have pleasure in calling attention to the matter generally next week. In the meantime we are happy to know that a large number of men have again found employment on this property of work.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

ST. HELEN'S COLLIERIES COMPANY (Limited).—Capital 50,000*l.*, in 50*l.* shares. To acquire the St. Helen's Colliery, the property of Messrs. Pilkington, according to an agreement made between W. Pilkington, Thomas Pilkington, W. W. Pilkington, and R. Pilkington of the one part, and Ralph Darlington on behalf of the company: and also to take over the Ravenshead Colliery, from the Ravenshead Colliery Company (Limited). The subscribers (who take one share each) are—David Bromilow, Battlesden Park, Bedford, colliery proprietor; David Gamble, Windlehouse, St. Helen's, manufacturing chemist; Jame Haddock, Windle, St. Helen's, colliery proprietor; H. J. Bromilow, Rainhill, colliery proprietor; W. Pilkington, Robey Hall, Liverpool, glass manufacturer; Thomas Pilkington, Knowsley Cottage, Prescott, glass manufacturer; W. W. Pilkington, Windle House, St. Helen's, glass manufacturer; and Richard Pilkington, Rainsford Hall, St. Helen's. The directors are Messrs. David Bromilow, David Gamble, J. Haddock, H. J. Bromilow, W. Pilkington, Thos. Pilkington, W. W. Pilkington, and Richard Pilkington, the qualification being one share. The directors will allot to the Messrs. Pilkington 1000 fully paid-up shares of 50*l.*, and to the Ravenshead Colliery Company 981 fully paid-up shares of 50*l.*, and also 19 fully paid-up shares of the same value, as the directors may authorise.

LA GITANA MINING COMPANY (Limited).—Capital 25,000*l.*, in 10*l.* shares. To acquire mineral property at Linares, Spain, and to carry on mining operations in Spain and Portugal. The subscribers (who take one share each) are—John Fowler, 2, Queen's-square-place, S.W., civil engineer; C. L. Norman, 8, Bishop-gate-street Within, merchant; W. H. Smyth, 12, Inverness-terrace, Bayswater, mining surveyor; R. D. Hodgson, 8, Bishopsgate street, merchant; J. D. Baldey, 2, Queen's square-place, S.W., civil engineer; Edward Woods, 3, Great George-street, S.W. The directors are Messrs. John Fowler, Edward Woods, W. H. Smyth, and Thomas Sopwith the younger, the qualification being the holding of 100 shares.

YNYSFAIG SLATE QUARRIES COMPANY (Limited).—Capital 48,000*l.*, in 5*l.* shares. To acquire and work the Ynysfaig Slate Quarries, parish of Celynin, Merioneth. The subscribers are—W. Gibbs, Hamilton-road, Lower Norwood, builder, 20; Ernest Turner, 44, Bedford-row, architect, 50; G. M. Thomas, 15, Weymouth-street, doctor of medicine, 10; J. A. Slater, 23, Denmark-street, Soho, engineer, 10; E. C. Wells, 14, Park-place, Peckham, 20; J. Orsi, 35, Poultry, merchant, 50; E. W. Pearson, 7, Crosby square, contractor, 50. The directors are Messrs. A. Lyon Hall, 48, Blenheim-crescent; E. W. Pearson, 7, Crosby-square; A. A Wilkinson, 4, Victoria street, and Ernest Turner, 44, Bedford-row, the qualification being the holding of 50 shares.

HOME INVESTMENT SOCIETY (Limited).—This is a company "limited by guarantee"—that is, in the event of its being wound up each member undertakes to contribute a certain stipulated sum towards expenses. The object is the carrying on of financial operations, &c. The subscribers are—W. H. Perkins, 65, Sutherland-gardens; M. J. MacCormack, 74, Clapham-road; James Alexander, Kilkeel, Ireland; H. B. Baines, 4, Redcliffe-square; F. A. Codd, 82, Queen's-crescent, Havistock Hill; J. Horncastle, Guildford; Richard Wells, 368, Cold Harbour-lane.

LOW MILL BLEACHING AND PRINTING COMPANY (Limited).—Capital 50,000*l.*, in 500*l.* shares. To take over the Low Mill Works, Lancashire. The subscribers (who take one share each) are—W. J. Craven, Whittle le Woods, Lancashire; John Whittle, Chorley; Thomas Whittle, Chorley; J. Craven, Chorley; W. J. Rusforth, Chorley; J. Miller, Whittle House, Chorley; James Whittle, Chorley; J. W. Smith, Chorley.

BRITISH STEAM TUG INSURANCE ASSOCIATION (Limted).—Capital 25,000*l.*, in 10*l.* shares. To insure steam tugs, &c. The subscribers, all of South Shields (who take 10 shares each), are—H. Nelson, W. Wright, T. Henderson, J. P. Rennoldson, J. Toward Ellington, L. Wright, J. W. Hessell.

CLEVELAND HOTEL COMPANY (Limited).—Capital 5000*l.*, in 10*l.* shares. To carry on business as hotel keepers at Sheffield.

SILVER MINING IN AMERICA.—There appears to be a good deal of misapprehension in the current views with regard to the cost of producing silver in the United States. A short time ago statements were published showing that the current expenses of working some of the best mines were but a moderate percentage of the proceeds of the mines, and it was inferred that the whole of the difference between these sums remained for profit. For example, it was shown from the report of the Consolidated Virginia Company, the most profitable of the Nevada silver mines, that the sales of gold and silver during 1875 had amounted to $16,9°3,77!, out of which $12,204,000 had been paid in dividends, leaving only $4,749,77!, or 28 per cent., as the apparent cost of production. Inferences have been made from these statements that the cost of producing silver at this particular mine is only 1s. 6d. per oz. But there is a manifest error in these calculations. The charges comprised in the above sum do not include any interest on the large expenditure incurred by the company in opening up the works and laying down plant. How great this has been may be imagined from an official account of this mine furnished to the United States Government last November, and quoted in the report of the British Consul at San Francisco. The writer states that before any ore was reached the shaft had to be sunk 1500 ft. from the surface through the solid rock. Since this was done the shaft has been sunk to the depth of 1°00 ft., so as to reach ore at different levels. The Consolidated Virginia Mining Company works only a portion of the famous Comstock lode, which has yielded such unprecedented results. The rest of the lode is in the hands of the California Company. The whole ultimate produce of the lode is estimated in the report at $150,000,000 on a moderate computation. Of this 45 per cent. will be gold, leaving 55 per cent., or $82,500,000, as the total ultimate yield of silver from these mines. At the present rate of production these deposits would be exhausted in rather less than nine years; but, as the California Company has not yet begun to get ore, the probability is that the lode will be worked out within a much short e period.

FLEXIBLE SHAFT FOR TRANSMITTING POWER.—An important and interesting mechanical novelty in Machinery Hall is an exhibit of Stow's patent flexible shaft and tools. The leading idea of this important invention was patented in August, 1872, since which time it has been extensively and successfully applied to dental purposes, as well as to wood carving, to drilling rocks, cleaning castings, cleaning boilers, &c. It is applicable to many purposes, one of the most important being the removal of flues from locamotive boilers, and the performance of other classes of work in railway repair shops The exhibitors, Stow and Burnham, have opened an office and factory in Philadelphia, where they manufacture cables or flexible shafts for the communication of power, and appropriate tools for a variety of work. The flexible shaft is composed of iron or steel wire, closely coiled back and forth until the diameter desired has been attained; it is then enclosed in a case, also composed of a coil of wire and covered with leather. By its construction the shaft possesses a high torsional and likewise a low banding resistance. In other words, if power be applied at one end, by means of a pulley suitably attached, it will be communicated to the other as surely as if the shaft was rigid, while at the same time its flexibility allows it to be turned in any direction. The great advantage of this device is that the power may be carried to the work instead of the work to the power. Thus the numerous holes necessarily drilled in a boiler after it has been put together, and can do longer be carried to the drill press and punching machine, may now be drilled by power. In fact, the flexible shaft largely increases the sphere of action of the steam-engine, leading it into the minute and intricate paths hitherto reached only by hand power. Each shaft is fitted with a pulley at one end, and, if desired, a clutch at the other, by which the tool may be connected or disconnected without stopping the machine.—*Iron Age* (New York).

THE WINTON BREAKER.—In Lackawanna Valley, near Scranton, a large breaker has been erected; the whole length of the breaker and plane is 434 ft.; length of breaker without plane, 264 ft.; width of breaker, 87 ft.; and height of same from the ground to the top of roof, 99 ft. There are two hoisting engines of 45-horse power each, for hoisting the coal up the plane or slope to the tip house, and one engine of 45-horse power for working the breaker machinery, screens, &c. To one unacquainted with the trade, the name by which the building is designated might appear peculiar, but anthracite coal must be broken up into the sizes known in market, and the building where this work is carried on is known as a "coal breaker." The coal is brought to the surface in the mine cars; in this instance hoisted to the top of the breaker the coal is dumped at the head of the slope in what is known as the "tip house;" a selection is made of the larger coal, which is known as lump, is then sent down to the railway car, on the main track, through a long covered schute; the steamboat passes through a screen, and goes down another schute to the main track. The coal that is to be broken into various sizes for market is put through the "crackers" or "breakers," which consist of revolving iron rollers having projecting teeth; after going through this crushing process the coal passes through screens, which separate the coal into the various sizes; as the coal passes from the screens to the shutes it passes over what are known as "telegraphs," which are long troughs, over which a number of small boys are supposed to have jurisdiction, and who are charged with the important duty of picking out the slate that is intermixed with the coal, and if coal is clear or dirty, so far as slate is concerned, it is due entirely to the watchfulness of these young gentlemen: the coal in the shute, in its separate size, is ready to be drawn upon as the market requires.

CHEMICALS, MINERALS, AND METALS.—(Messrs. J. Berger Spence and Co., July 9)—Alumina: Alum, 6*l.* 15s. for loose lump; ground, 7*l.* 15s.—Aluminous cake, 4*l.* 15s.—Ammonia: Sulphate, grey, 18*l.* 10s.; white, 18*l.* 15s.; muriate, 30*l.*; sal ammoniac, firsts, 45s.; seconds, 44s.—Acid: Tartaric, English, at 1s. 5½d., ground or crystal; foreign, 1s. 4¾d., crystals; oxalic, 5d.; sulphuric, 3*l.* 10s. to 3*l.* 15s.; picric acid, 1s. 8d. per lb.—Arsenic: 11*l.* 17s. 6d.—Bleaching Powder: 5*l.* 10s.; for whole of 1876, 6*l.* 10s. to 7*l.*—Litharge: Best flake, 23*l.*—Metallic Salts: Iron salts, green and rusty copperas, 55s.; in casks or barrels, 60s.—Copper Salts: Sulphate of copper, 24*l.*—Magnesia: Epsom salts, 8*l.* 17s. 6d.; refined, 4*l.* 10s.—Nitrate of Soda: 11s. 3d. to 11s. 6d.—Potash: Muriates, 80 per cent., at 6*l.* 7s. 6d. f.o.b.; Prussiate, yellow, 11¼d.; chlorate, 8¾d.; bichrome, 4¾d.—Soda: Cream caustic, 60 per cent., 11*l.* 17s. 6d.; white, 60 per cent., 12*l.* 7s. 6d.; soda ash, 1¾d. to 1 13-16d.; soda crystals, 4*l.* 10s.; bi-carbonate, 10*l.* 15s.; salt cake, 2*l.* 15s.; Glauber salts, 2*l.* 17s. 6d.—Sugar of Lead: Brown, 25*l.* 10s.; white, 38*l.* 10s.—Brimstone: Best thirds, 6*l.*—China-clay: 15s. f.o.b Cornwall; "Rosemellyn," 24s.; "BM," 34s.—Iron Ore: Hematite, 15s. to 22s. 6d.; oolitic, 8s. to 10s.; Algerian, 50 p. c., 23s. to 24s., c.f.i. U.K.—Manganese: Ores, 90s. to 100s. for 70 p. c.—Pyrites: Spanish cupreous, 5½d.; non-cupreous, 6¾d.—Phosphate of Alumina, 3*l.* to 3*l.* 10s. per ton.—Phosphates: High strength, 80 to 85 per cent., 1s. 4d. to 1s. 5d. per unit; Estremadura, 1s. 3d.; ordinary, 60 per cent., 1s.; precipitated phosphate of lime, 70 per cent., 5*l.* 15s.—Copper: Chili bars, 72*l.* to 72*l.* 10s.; B.S. ingot, 79*l.*; tough cake, 78*l.*—Iron: "Ayresome" Yorkshire Pig: No. 1, 51s. 6d.; No. 2, 48s. 6d.; No. 3, 45s. 6d.; No. 4 (foundry), 43s. 6d.; No. 4 (forge), 42s. net cash, or 1s. extra four months' bills; Scotch pig, warrants, 56s. 6d.—Lead: Best English soft pig, 20*l.* 15s., delivered Manchester.—Quicksilver: 8*l.*—Spelter: Silesian, 23*l.*; English, 23*l.* 10s.—Tin: Straits, 73*l.* 10s.; British, 81*l.*—Tin plates: Best charcoal, 28s.; best coke, 24s. per box.—Tubes and Fittings: Discounts on application.—Esparto: Oran, fair to best, 7*l.* 5s. to 8*l.* 5s.; Susa, fair to good, 8*l.* 10s. to 9*l.* 5s.; Spanish, fair to best, 11*l.* 15s. to 12*l.* 5s. per ton; Tripoli, good ordinary, 6*l.* to 7*l.* per ton.—Globe steam-boiler powder, 20s. per cwt. in casks.—Resin: Common strained, 4s. 9d. per cwt.; medium, 5s. 9d. to 6s.—Super-phosphates, 80 per cent. soluble, 3s. 6d. per unit; 25 to 26 per cent., 3*l.* 10s.

THE WILD DUCK, OR SPORTSMAN'S ARMS, MEETING.

"Well, Cousin Will," says Jan Temby, "since our last mitten I see'd Uncle Will Clitters, so I said 'Where do ee belong now, Uncle Will?' 'Why then,' said Uncle, 'I'll tell thee you; I belong down to the 70 you; we are eight men in the pare, and I'm the odd man you.' 'Es the pitch wet, Uncle Will.' 'Wet you? Why a ess like the ocean you.' 'Es a a good pitch, Uncle Will?' 'Iss a ess you, and a purty stuffy lode, offaen going down like a pack-saddle, and drummen like a old hedge; and we shall get a purty little sturt this time you, ef we can keep the waater out." "I'm glad for Uncle Will," says Cousin Will, "but the beef is ready, men, and waiting." "That's no'n," says Jemmy Down, "now throw to un, comrades, for tess what I caal a purty fitty thing, and we shall be so stiff as constables after such a troil as this here." "Some say tes wrong to mit here once a month to have a bit of dinner, but I don't think so," says Jan Jewill, "for we don't say or do any hurt to anybody. We pay for all we have, and I'll agree sose we'll mit here and discoose the point so long as we mind to, without axing anybody." "Nobody but a long-faced hypocrite," says Uncle Henry Treylon, "would find fault with our mittens, and all the can say waan't hurt we one bit." "Well," says Jan Temby, "since our last mitten, sose, I've ben thinking pon some curious old workings I seed when I was a little boy in Beck W——s fields as you go from Bolenowe to Craft Common. By the side of the road, as you all know, there is lots of great shaft-burrows, and the old men say that waater from Chycarne Moor was brought to the great clay pits for washing the tinstuff. Well, sose, 'twas to the south of the old burrows, in a level grassy field, where I see'd the old workings. A man was hacking up dressen in a ditch, and found a little hole, and after hacking a bit more there was a reg'lar little shaft—quite dry; he went and got a rope, and some of the neighbours sent him down. The shaft was about 30 ft. deep, and purty little levels drove east, west, north, and south, two or three lodes cut in the cross-cuts from the shaft, and all worked away up to the fern roots, and tes a mystery the fields have not crushed in the levels; but I tell ee, men, you never see'd such purty smooth waals to lodes. Why, they wor so smooth and shining as the sleeves of an old sumpman's duck jacket. How far those shallow levels wor drove nobody can tell, but as far as the men could go the lode was all worked away, and you may be sure there was something good in it. No man living can mind when this was done: there was no sign of workings in the fields. The little shaft was then filled up, and the thing was hushed up to, for Beck didn't want to have her fields tore up, and the grass is growing over the place as if there was no workings, and rich lodes under it, for a stranger might go over the fields to the end of his days, and would never find the workings. 'Tis more than 60 years ago when I see'd this, and I often thoft to myself that ef many people knowed this place a would be worked in a hurry." "I know the ground well," says Cousin Will, "but was not aware of any workings being in the field described by Jan Temby. ("No," says Jan, "nor very few else living now.") I have no doubt, however, that a fine run of tin and copper mines will be found in this run of ground; there is everything in favour of it, for these are a great channel of lodes in beautiful ground, between Old Polgive and West Tresavean, or Chycarne Moor; there is, in fact, miles of comparatively new and unexplored mineral ground in this direction." "Iss sure," says Jan Temby, "and there's a great tin lode in the west end of Old Polgive, only a few fathoms north of the copper lodes, for I cut'n myself, and rose a lot of tin from the back of'n. I mind too, when a lot of rich copper ore was rose near Champer's shaft and Waater-wheel shaft; there's more of it there yet, and I would rather venter there than in some things I see working." "I agree with you, Jan," says Cousin Will; "it is 64 years since Capt. Mitchell, of Gwennap, put up a small wheel on the western shaft, which is near the junction of granite and killas, and there is no doubt extensive and very rich deposits of copper and tin about that place, and I am greatly surprised that such ground has remained so long idle." "No wonder," says Jan Jewill, "but hundreds and thousands of buffle-heads would rather lose millions abroad than make it at home." "That's ov'n, and tes true as the gospel," said Jemmy Down, "but tha caan't cheat enuff in the home bals, and must go abroad where the can cheat pure and fitty; but there's some capns, sose, the very picters of poor speed, and proud as fire, and never rose mineral enuff to make a brass button. Old Jack —— was telling me about one of them the other day. Jack wanted to grend his sy (scythe), and went down to Wheal ——, and begun to grend away pon the new grenden stone; very soon out come Capt. —— in a purty fuss, sure enuff. 'What art a doing there?' says Capt. ——. 'Only grenden my sy a bit,' says Jack. 'Now be off,' says Capt. ——, 'you arn't going to spoil our new grenden stone with your old sy's.' 'Why you don't mean that, sure nuff, do ee, Capt, ——?' says Jack. 'Iss, I do,' says he, 'and be off.' 'Well,' says Jack, 'I heer'd it before, but dedn't believe it.' 'What's that,' says Capt. ——. 'Why,' says Jack, 'that thee art the picter of poor speed, and a good deal wuss than Uncle Tom Treluck, and he knacked nine bals and a coal-yard.'"—*Cousin Jack's Unpublished MS.*

CHEMICAL PHILOSOPHY.

The last issued volume of Messrs. Longmans' Test Books of Science is a very useful Introduction to the Principles of Theoretical and Systematic Chemistry,* by Dr. Tilden, of Clifton College, which will doubtless fulfil its object of giving a more decided educational direction to the subject than has hitherto been customary. In consideration of its peculiar fitness for developing the powers of observation of reasoning and of memory, no branch of experimental science deserves more emphatic recognition at the hands of educators than chemistry, and Dr. Tilden believes that in order to enable its advantages to be reaped to the full the methods of teaching very prevalent in schools require to be considerably modified. He thinks teachers ought to realise the fact that chemistry as a school subject is not taught with a view to its practical application to medicine, manufactures, or the arts, but because the study is calculated to quicken the faculties of observation, to strengthen the memory, and to engender a power and a habit of continuous thought, as well as to arouse new interests and open up new fields to the imagination. It is of little consequence in this view whether or not the facts acquired can be turned to practical account, but it is of prime importance that the phenomena brought under their notice, and the manner in which those phenomena are presented, should be such as will compel the students to think. He explains that the book embodies the substance of the lectures he has been giving for some time past to the more advanced classes in Clifton College. The molecular theory has been adopted in a somewhat rigid form, not by reason of any special convictions of his own regarding its permanence as a scientific truth, but because he his satisfied that whatever form it may ultimately assume it is even now a most important and almost indispensable aid to teaching chemistry.

The constitution of matter is first explained, the nature of molecules, atoms, elements, and compounds being carefully described; the special province of chemistry is pointed out, and solids and fluids, the special peculiarities of gases, and the intermediate states of matter are referred to. Fusion and solution are next treated of, and the chapter on this subject is followed by others on liquid diffusion and dialysis, evaporation and ebullition, diffusion and dialysis of gases, relation of gases to temperature and pressure, and spectra. In the second section of the book the laws of chemical combination, nomenclature, and conditions of chemical change are among other things treated of; then follow chapters on equivalents and atomic weights, molecular weights and formulæ, dissociation, atomicity, isomerism, and so on; the fourth and fifth sections being devoted to the classification of elements and of compounds respectively.

The whole of the information is given in a very careful and lucid style, and the value of the volume is much enhanced by the insertion of a series of well arranged questions at the end of each section, so that the student may ascertain whether he has mastered the details given before proceeding to the next division of the book. The work will be of great utility to all students, and especially to those who intend afterwards to apply themselves to the study of practical chemistry for business purposes.

* "Introduction to the Study of Chemical Philosophy: the Principles of Theoretical and Systematic Chemistry." By WILLIAM A. TILDEN, D. Sc. Lond., F.C.S., Lecturer on Chemistry in Clifton College. London: Longmans, Green, and Co.

ENGLISH COAL IN BELGIUM.—An official Belgian return shows that the imports of English coal into Belgium have considerably increased this year. Thus, they amounted to May 30 this year to 150,000 tons, as compared with 70,000 tons in the corresponding period of 1874.

Mining Correspondence.

BRITISH MINES.

ABERDAUNANT.—S. Tey, July 19: The new shaft is down 12 fathoms; the ground is much the same for sinking as it was last week, and the men are making good progress. In the deep adit cross-cut, towards the new shaft, there is no change worthy of remark during the week. In No. 2 adit, driving east, I am very pleased to say a change has taken place in the ground; we got through the hard gritstone which we have had to contend with for several months past, and are now into blue clay-slate; the lode is 7 ft. wide, composed of quartz, carbonate of barytes, sulphur, and spots of lead. In No. 1 adit, driving east, the lode is 6 ft. wide, and is worth 3l. per fathom for lead. In the east part of the sett (Crowlwm), in driving the cross cut towards the south lode, we have met with a small soft branch, which underlies north, composed of barytes, sulphur, and spots of lead; the ground is more favourable for driving.

BLUE HILLS.—S. Bennetts, A. Gripe, July 15: The gronnd in the engine-shaft, sinking below the 76 fm. level, continues very favourable for progress, and is also just the same kind of ground in which the Pink lode has usually been found the most productive. Water is issuing freely from the lode where intersected in the side under the gossan, which was not the case over the same faults. We infer from this that no other fault of importance is near at hand.

CWM DWYFOR (Copper and Silver-Lead).—J. Irwell, July 19: Steward's Shaft: The lode in the bottom of this shaft, sinking below the 10 fm. level, is yielding saving work for lead ore, and as soon as the sinking is completed for a 20 fm. level we shall start to drive east and west of this shaft, in order to open up stoping ground. Last night the men met with a smooth head of clay-slate in the western end of the shaft dipping east. I am not as yet able to tell what influence the clay-slate will have on the lode, but I have no doubt that greater speed will now be made in sinking than when we had the hard trap rock to get through.—No. 4 level south: In this level, driving east of Stewart's shaft, the character of the lode and ground is still the same. I intend next week to put the men to open on the caunter branch west of Stewart's shaft, where the lode yields 10 cwts. of lead ore per fathom.—No. 3 level south: In this level driving east of south cross-cut we have a large lode.—Ore Dressing: We are pushing on the dressing with all speed. We have about 4 tons of dressed ore in the lead-house towards the next sampling, and, as already stated, about 200 tons of undressed lead ore, and from 20 to 30 tons of undressed copper ore.

CWM ELAN (NEW).—Wm. Goldsworthy, July 15: The new water-course is being pushed forward with all speed by the number of hands engaged thereon. The weather is most favourable.

DE BROOKE.—J. Phillips, July 19: The lodge at the 35 is completed, and the cross-cut through the lode resumed; this is now producing very fine stones of solid ore. A winze in the bottom of the 25 has just been commenced in a fine productive lode of lead ore. The stopes are without alteration. The dry weather has very nearly put a stop to our dressing. Sixteen tons of lead ore were sold on the 15th inst., at 1[illegible]l. 10s. per ton.

DEVON GREAT CONSOLS.—July 21: There is nothing new in the report from the mines this week. The cutting of the plat and barrow-road at the 180 in Richard's engine shaft, progresses favourably. Our sale yesterday, 705 tons, realised 2222l.

EAST BASSET.—R. Pryor, E. Adams, July 19: There has been no change throughout this mine during the past week worthy of remark. Friday next being our pay and setting day, a full report shall follow.

GAWTON COPPER.—G. Rowe, G. Rowe, jun., July 15: The lode in the 127 east is 6 ft. wide, showing a very kindly appearance, worth 15l. per fathom. The lode in the stope in the back of the 117 is worth 8l. per fathom. No. 2 stope, in the back of the same level, is worth 10l. per fm. The part of the lode carried in the 105 east is 6 ft. wide, producing capel, spar, and mundic, impregnated with good quality yellow copper ore, altogether of a very promising appearance. The lode the rise going up in the back of the 105 is worth 12l. per fathom. The stope working in the back of the same level, east of winze, is worth 5l. per fm. The lode in the winze sinking below the 95 is worth 8l. per fm. The lode in the 82 east is 5 ft. wide, producing capel, spar, and mundic, with occasional stones of ore. The stope in the back of the 8. is worth 8l. per fathom. The tribute department is without change.

GREAT DYLIFFE.—Edward Rogers, July 19: Dyliffe Lode: The underlie engine-shaft is down 5 fms. 5 ft. 3 in. below the 120; sinking by nine men, at 15l. per fathom. We are taking down a part of the lode—about 1 ft. wide—which is producing rich stones of lead ore. In the 120 end, east of this shaft, the lode is worth 2[illegible]l. per fathom—the present price for driving, by four men, is 6l. per fm. The winze in bottom of the 105 is suspended by reason of bad ventilation. The men (six in number) are put to rise from below at 8l. per fathom. I expect to communicate to the winze in the latter part of next week. The 60 is set to four men, to drive east of boundary shaft, at 6l. per fathom; the lode is 3 ft. wide, a mixture of blende, copper, and a little lead. I expect an improvement in this end in about 4 or 5 fms. driving. The 45 is set to six men, to drive west of the winze, at 3l. per fathom, and 4l. 10s. per ton for the lead; the lode is worth for copper and lead 20l. per fathom. The 40 end is set to four men, to drive east, at 4l. per fathom, and 7l. 10s. per ton for lead; the lode is worth 10l. per fathom. The rise in back of this level is also set to four men, at 4l. per fathom, and 7l. 10s. per ton for lead; the lode is worth about 9l. or 10l. per fathom. There are 95 men employed on tribute, as follows:—Two men at 3l. per ton, four men at 3l. 10s., six men at 4l. 10s., seven men at 4l. 15s., twenty men at 5l., twelve men at 5l. 10s., four men at 6l., eight men at 6l. 10s., four men at 7l., and twenty-eight men at 7l. 10s. per ton. I am sorry to say we have no water for dressing or drawing, but we shall be able to keep the men at work underground for a considerable time.

GREAT RETALLACK.—J. Harris, July 15: I have suspended the driving of the cross-cut through the lode at the 40, as the end has got into more defined killas, and I have placed the men to clear out the 20, west of the old engine-shaft, in order to drive the end to prove the lode west at the intersection of the lode with the elvan, as this point has not been seen in the mine, but which I think is a most important point.

GUNNISLAKE (Clitters).—W. Skewis, J. C. Seccombe, July 20: The sinking of the engine shaft, and the bargains generally, are progressing satisfactorily. There is no particular change to notice in the value of the various points since last report.

HINGSTON DOWN.—J. Richards, July 20: Bailey's Shaft: In the 160 west the lode is still 5 ft. wide, and produces occasionally good stones of copper and tin ores. The lode in the 150 west is of fair size, 3½ ft. wide, consisting of capel, quartz, mundic, peach, and a little black oxide of copper ore. In Rowe's winze, sinking below the 150 west, the lode is worth for length carried (9 ft.) 3 tons of ore, or 10l. per fathom. The lode in the stope in the bottom of the 150 west, and west of Rowe's winze, is still worth 5 tons of ore, or 15l. per fathom. The lode in the three stopes in the bottom of the 150, two to the east and one to the west of Nicholl's winze, is still worth on an average 7 tons of ore, or 3[illegible]l. per fathom. In the two stopes in the back of the 150 west is still worth on an average 5 tons of ore, or 15l. per fathom. In the 140 west the ground continues favourable for progress. The lode in the stope in the bottom of the 140 west is worth 3 tons of ore, or 9l. per fathom. In the stope in the back of the 140 west, on the north part of the lode, the lode is worth 4 tons of ore, or 12l. per fathom. The lode in the two stopes in the back of the 110 west, continues worth on an average 4 tons of ore, or 10l. per fathom.

KINGSTON CONSOLS.—G. F. Richards, July 20: Good progress has been made during the past week in sinking the engine-shaft below the 30. The south part of the lode which is being carried is further improved, containing a branch of lead and blende ores on the north side of the shaft—producing saving work; this is an important feature. Good progress has also been made in driving the 30 west, and I am pleased to say the lode is a little further improved, producing good saving work of silver lead and blende ores. In Griffin's rise in the back of the 18 west very fair progress has been made, but at present the lode is not so productive as at first, yielding now saving work of silver-lead and blende ores. In the new winze and stope (No. 3) in the bottom of the 18 west the lode is looking well, and produces about 8 cwts. of lead and 10 cwts. of blende ores per fathom. The stope in the bottom of the adit level is worth 8 cwts. of lead and 10 cwts. of blende ores per fathom. No. 1 stope in the back of the 18 will yield 8 cwts of lead and 10 cwts. of blende ores per fathom. No. 2 stope in the back of the 18 will produce 5 cwts. of lead and 5 cwts. of blende ores per fathom. On Saturday next we shall sample from 10 to 12 tons of lead and about 25 tons of blende ores, and we hope now to continue the samplings regularly. The appearances of the mine altogether are most encouraging, and all the machinery is working well.

LADYWELL.—A. Waters, July 20: There is no change in the mine of note for the last week or two. The whole of the last sale of lead is waiting the order for delivery.

LLAN GAN.—July 20: Wright's Shaft: The lode here is improved since my last report, and likely to further improve as we sink; we find the lode richer and more compact.—Smith's Shaft: The lode in this shaft is from 3 to 4 ft. wide, and produces some good work: the lode is looking better, and improving as we go deeper, and more promising than is expected for the depth.—The New Engine-Shaft: We are getting on with this shaft well; indeed, all the ore raised is of good value.

LLANIDLOES.—John Kitto, July 15: The engine shaft is now down to the 72, and we shall immediately proceed to drive out a new level east on the course of the lode, and I hope we shall reach the run of ore ground in a month from this date. In the 60, driving west, we have a very kindly-looking lode, which produces a little ore occasionally, but so far not enough to value; but I think from the appearance of the lode we may reasonably expect a further improvement to take place shortly. The stopes in the roof of the 60 fm. level have been looking rather better during the past fortnight, and have been yielding a fair quantity of ore, but there is no other change to refer to in any other part of the mine. We have delivered our last sale of ore to the purchasers, and are now busily engaged in getting another parcel ready.

LLANRHAIADR.—E. Pascoe, July 29: The deep adit cross cut continues to look favourable, the clay-slate being mixed with quartz, mundic, and a little lead. The men are making fair progress in sinking the winze below No. 4, the lode yielding a little lead, but not to value. In the stope west of winze, below No. 4, the men have been putting in binning during this week. Shall be ready for stoping again in a day or two. The stopes over No. 3 are looking rather better, worth 6l. 15s. per fathom.

MARKE VALLEY.—W. George, J. Stenlake, July 20: We continue the various points as reported at the general meeting, and since then there is no material alteration either in the ends or stopes to notice. We are pleased to say the driving of the 10 continues to open out good profitable ground.

MELINDUR VALLEY.—J. Kitto, July 14: We are making fair progress with the sinking of the engine-shaft, together with the driving of the various levels, but I have nothing particularly new to report to you. In driving the 14 fm. level on the north part of the lode we have some good ore, and are opening out at this point some paying ground for stopes. The winze from the 14 to the 25 fm. levels has communicated, and has given good ventilation, and we shall now be able to stope away the ore standing in each end of the same. In the north cross cut we have been trying a branch that was passed through some time ago, but so far it has not resulted very favourably; it seems, however, rather too promising to leave, and not strong enough to follow, but we have suspended it for the present, and have resumed the driving of the cross cut, where I am still of opinion we must soon intersect one of the north lodes.

NEW CHIVERTON.—J. Trewartha, July 20: The engine-shaft is down 3 fms. 4 ft. below the 50; lode worth 7l. per fathom. The lode in the 50 north is worth 7l. per fathom. In the 50 south the lode is worth 10l. per fathom. No change to notice in the ends at the 35. Good progress is being made in sinking the winze below the adit, and a great change has taken place in the lode. When driving the adit the lode was principally gossan, but now the gossan is wearing out, and mundic is taking its place. The lode is over 12 ft. wide; the part carried in the winze is about 4 ft., which is chiefly mundic, but we hope very soon to cut into a good bunch of lead. The tribute pitches are without change to notice.

NEW CONSOLS.—R. Pryor and Son, T. Jenkin, H. Vial, July 19: The whole of our underground tutwork bargains continue to look well, and there has been no change worthy of notice since our last week's setting report. The very dry weather has considerably diminished our supply of surface water, which is the only thing we have to complain of at present.

NEW PEMBROKE.—F. Puckey, C. Meriott, July 18: The lode in the 110 end, driving east of the engine-shaft, is 4 ft. wide; a strong kindly lode for the production of mineral. At the present time it is yielding saving work for tin, and as we approach the bunch of tin and copper gone down below the 100 we expect a good improvement at this level also. In the 100 end, driving east on the north part of the lode, we have passed through the splice; the lode is again 3½ ft. wide, and the south part of the same is yielding good stones of tin. In the stope in the back of the 100 behind the end the lode and branches for 6 ft. wide are worth for tin and copper 18l. per fathom. In the stope in the back of the 100 on the south part of the lode the lode is worth 6l. per fathom. The lode in the winze sinking below the 100 is 6 ft. wide, and worth 8l. per fathom. In the 75, driving east on the north lode, the lode is still 4 ft. wide—a very strong, regular, and well-defined lode, containing spots of copper ore, and letting out a large stream of water.

NORTH LAXEY.—R. Rowe, July 13: Setting Report for July: The 121 stope by five miners and five labourers, at 5l. per fathom. The 110 stope by two miners and two labourers, at 5l. 10s. per fathom. The 84 end by three miners and three labourers, at 6l. 10s. per fathom. The 70 stopes by five miners and five labourers, at 5l. per fathom. The 60 stopes by two miners and two labourers, at 4l. 10s. per fathom. The 60 sole by one man and one labourer, at 4l. 10s. per fathom. The 50 sole by two miners and two labourers, at 5l. per fathom. The 50 roof by four miners and four labourers, at 5l. 10s. per fathom.

— R. Rowe, July 20: I have no alteration to notice in the various stopes since my last, and the 84 end is about the same—lode 2 ft. wide, saving stuff for lead. Water up to the 121 level. Engineers going on well with erection of engine, which will shortly go to work.

NORTH TRESKERBY.—R. Pryor, July 19: The lode in the stopes in the 30, east of Highburrow, is worth for tin 27l. per fathom. The lode in the stopes in the 30, west of Highburrow, is worth for tin 17l. per fathom. The lode in the 30, east of Doctor's, is worth for copper 7l. per fathom.

OLD TREBURGETT.—W. Hancock, W. C. Bryant, July 10: Good progress is being made in sinking the engine shaft below the 90. If the ground continues as at present the men will complete their contract by the time specified—that is the end of next month. The 90 to drive south of the shaft on the lode, by six men, two months, at 6l. 10s. per fathom; worth about 8l. per fathom. A stope in the back of the level by two men, the month, at 55s. per fathom, worth 6l. per fm. In the 80, south of the shaft, the ground within the last few days has very much improved for driving; contract not out, worth about 10l. per fathom. No. 1 stope in the back, contract not out, worth 8l. per fathom. No. 2 ditto, by eight men, the month, at 3l. 10s. per fathom, to be paid for fixing stull, worth 9l. per fathom. To drive north under No. 4 winze under the 70, on the east part of the lode, towards the 80, by nine men, the month, or water cut down, at 10l. per fathom. We still have a great deal of water, but are daily expecting to drain it down. To drive cross-cut east in the level by two men, the month, or intersect the lode, at 9l. 10s. per fathom; these men have also to assist to draw stuff from the level to No. 4 winze. Masey's shaft will be completed from surface and stuff drawn away by end of the week. We shall then set a contract to complete it to the 10, as there is but little timber required now, except for dividing and casing; greater progress will in future be made. We have now 38 men on tribute—Two at 13l. per ton, four at 15l. per ton, five at 16l. per ton, 16 at 17l. per ton, six at 19l. per ton, three at 20l. per ton, and two at 17l. per ton, and 20s. per fathom; this latter is to prove a piece of ground in back of the 90 north. About 13 fms. above it a pitch is working at 15l. per ton, and the men getting decent wages, though a lot of water to contend with. We purpose sampling on Wednesday next two parcels of silver-lead ore.

PARYS MOUNTAIN.—T. Mitchell, July 20: We have another string of copper and sulphur in the 90 cross-cut south to day, also a small joint containg soft flookan and a little copper ore. The nature of the ground is everything that can be desired for the production of copper. All other points continue to look much the same as last week.

PATELEY BRIDGE.—C. Williams, July 19: Lumb Vein: In my letter of the 6th inst. I predicted that we were then bordering a great deposit of lead ore. I have now the pleasure of informing you that my expectations have been fully realised. We have cross cut into the deposit for 15 feet, and for the whole of that distance the vein is filled with lead ore and gossan, and the farthest point in the cross cut to all appearances being the richest portion. When the south wall is reached I shall be able to furnish you with a correct estimate of its value. If all the ore were concentrated together it would make a solid rib about 3 feet thick. Fielding's vein going north-west in the east cross-cut, in the 20, is 2 feet in width, and worth 12l. per fathom for lead ore; ground a little easier. The vein in the stope in the back over this level is worth 10l. per fathom for lead ore. The sinking of the engine shaft under the 20 is proceeding in a very satisfactory manner. All other work without change.

PENHALLS.—S. Bennetts, W. Higgins, July 15: There is no change to notice in the 70 east. In the 160 east end the lode is worth 10l. per fathom, and the west end on the same section of the lode is worth 7l. per fathom. The 50 north cross-cut is without much alteration since last reported on. The 48, west of great cross course, is worth 10l. per fathom. The 45 west, on another section of the lode, is worth 8l. per fathom, and the 45, east of Shop shaft, 6l. per fathom.

PENNERLEY.—W. T. Harris, J. Delbridge, July 19: Engine-Shaft: The lode in the 130 east contains good stones of lead ore, and improving as driven forward. The lode in the 120 east is small, and containing no lead to value; the ground is favourable for progress. The lode in the winze sinking below this level is 2 feet wide, worth 3 tons of lead ore per fathom. The lode in the rise is worth 2½ tons of lead ore per fathom. The lode in the end, driving west, is 1 ft. wide, worth ½ ton of lead ore per fathom. The lode in the stope in the back of this level is worth 1½ ton lead ore per fm. The lode in the 100 east is producing occasional stones of ore. The lode in the 80 west is producing 1½ ton of lead ore per fathom, and very promising. No. 1 stope, in bottom of 70 fm. level, is worth 2 tons per fathom. No. 2 stope is worth 1½ ton lead ore per fathom.—Potter's Pit: The shaft men are engaged cutting lodge. The lode in this level west is at present twitched, and ground slow for progress. The lode in the winze and stopes below the 75 fm. level is worth 3 tons lead ore per fathom, and looking well. The lode in the 65 fm. level west is producing 1 ton lead ore per fathom. The lode in the 35 fm. level east, on Wilson's lode, is worth 1 ton lead ore per fathom. The lode in the 2[illegible] fm. level is yielding stones of lead ore. All other points and pitches are without change for remark.

PLYNLIMMON.—J. Garland, July 19: Since the date of setting report last week I am pleased to say that the lode in the 24, east of new winze, has steadily improved, and now produces 1½ ton of lead ore per fathom, with a very kindly appearance for further improvement. The stope in the back of this level, east of new winze, has also slightly improved, the present yield of which I estimate at 1¼ ton of lead ore per fathom. In the stope in the bottom of this level, east of cross-course, the dam mentioned in my last has been completed, which has greatly facilitated the working of this stope, which was very troublesome; it still produces full 2 tons of lead ore per fathom. We have the pulley-stands and most of the rods for the new line ready. I expect some of the small sheaves from the foundry to morrow, when their erection will at once be commenced. The weather continues very dry and hot, and our supply of water is fast falling off, nevertheless drawing and dressing are proceeding satisfactorily towards another sale of lead ore. The machinery throughout is in fair working trim.

PRINCE OF WALES.—J. Andrews, J. Pryor, July 19: The following was our setting on Saturday:—To drive the 77 cross cut north, by six men, at 7l. per fm. At this point no lode has yet been met with. To drive the 55 west, by six men, at 10l.; lode 3½ ft. wide, worth 25l. per fathom. To drive the 45 west, by six men, at 8l. per fathom; lode 5 ft. wide, worth 5l. per fathom, and looking promising for further improvement.

RELISTIAN CONSOLS.—J. Curtis, July 20: There is no material change to notice in the 34 since last report, spots of tin, mundic, blende, &c.

ROMAN GRAVELS.—A. Waters, July 20: The various ends and stopes throughout the mine continue to yield ore as for some weeks past, and were I to go into details they would only show the mine to be looking very well, which is the case.

SAINT HARMON.—J. Kitto, July 15: We have now got the 67 fm. level east and west, the 35 east and west, and the 48 cross-cut south in driving with full sets of men, and very fair progress is being made, but we have not yet made any discovery of much importance; the lode, however, looks very kindly in places, and I have no doubt that we shall discover something good very shortly. The stopes in roof of the 35 fm. level are looking pretty well, and are yielding a pretty fair quantity of ore, and likely to continue. We have put the engine-shaft and all the levels underground in a thorough state of repair, as well as the machinery and buildings, &c., at surface, and everything is now in first class order.

ST. PATRICK.—Wm. Frances, July 18: In the 120 yard cross cut I have great satisfaction in reporting that the sump continues to improve for ore, and in every way. The 90 yard cross cut continues without alteration. The 60 yard level north is still in good bearing ground. All goes well.

SOUTH CONDURROW.—Wm. Rich, W. Williams, Henry Abraham, July 19: The ground is favourable for sinking the boundary shaft below the 20. In the eastern part of the sett the new shaft is holed to the 40, but it will probably take a month to make the shaft complete from the 30 to the 40. The winze in the 50, east of King's, is worth 7l. per fathom. The rise in the back of this level is worth 10l. per fathom. The 60 end west is improving, now worth 18l. per fathom. There is nothing new to report either in the 70 or 82 west. No. 2 winze, in the 82 east, is worth 12l. per fathom. We are daily expecting to communicate the cross course winze in the 82 east with the rise in the back of the 93. The 93 end west is worth 12l. per fathom.

SOUTH ROMAN GRAVELS.—John W. Powning, July 21: We have not got on with the sinking quite so fast as I anticipated, having had a deal of trouble with the new bottom or drawing lift. The weather has been unusually dry, consequently the water in the mine has fallen off very considerably, so much so that we were obliged to make some alterations by reducing the stroke from 5 to 3 feet, and put a tap into the down piece of top lift to keep the pole solid. The engine and lifts now work very much better, and the water is being kept from five to six strokes per minute. I calculate to push on the sinking without further interruption.

TANKERVILLE.—Arthur Waters, July 20: Good progress is being made in sinking Watson's engine shaft below the 167. The winze sinking below the said level, about 17 fms. west of shaft, is going down in the centre of a wide lode, and improving in value as we sink. The lode is looking better than on the day of the general meeting. The stopes in back of said level and throughout the mine are quite up to late valuations. The work connected with the new pumping engine, re arrangement of pitwork, &c., progresses very satisfactorily.

TREBEIGH CONSOLS.—J. Gifford, July 19: Saturday last being our setting and pay day, we set Ward's engine-shaft to sink by nine men, and made it good with timber; stent the month, at 15l. per fathom; the same is down 11 fms. 5 ft., in a very congenial killas, with small veins of quartz and sulphuric mundic intermixed. The water increased a little, but very trifling. The engineers are busy in getting in the engine.

WEST CRAVEN MOOR.—David Williams, July 19: The lode in the east level, bottom of new west shaft, has much improved, being 3 ft. wide, composed of lime-spar and lead ore, worth of the latter fully 1 ton per fathom. Other points much as last represented.

WEST GODOLPHIN.—J. Pope, July 15: Monthly Report: Caunter Lode: In the 60, sinking in Pressure shaft, the lode is 1 ft. 3 in. wide, worth 10l. per fathom; distance worked, 2 fms. 3 ft., producing tin for the length of the shaft. In the 60, driving north, the lode is 2 ft. 6 in. wide, worth 4l. per fathom; distance worked, 3 fms. 2 ft. 3 in., producing tin and copper.—Wilson's Lode: In the 60, rising west, the lode is 3 ft. 6 in. wide, worth 15l. per fathom; distance worked, 2 fms. 2 ft. 6 in., producing tin. In the 60, driving east, the lode is 3 ft. 6 in. wide, worth 8l. per fathom; distance worked, 44 fms. 0 ft. 4 in., producing tin. In the 56, driving west, the lode is 3 ft. wide, worth 6l. per fathom; distance worked, 38 fms. 4 ft. 11 in., producing tin. In the 50, sinking the winze west, the lode is 4 ft. wide, worth 30l. per fathom; distance worked, 2 fms., producing tin. In the 50, stoping the back west, the lode is 4 ft. wide, worth 10l. per fathom, producing tin and copper. In the 50, driving east, the lode is 1 ft. wide, low price tinstuff; distance worked, 48 fms. 1 ft. 2 in. In the 40, stoping the bottom east, the lode is 3 ft. wide, worth 6l. per fm., producing tin. In the 40, stoping the bottom east, the lode is 3 ft. wide, worth 7l. per fathom, producing tin and copper. In the 30, stoping the back east, the lode is 2 ft. wide, worth 4l. per fathom, producing tin. In the 10, sinking in Boulton's shaft, the lode is small; distance worked, 6 fms. 3 ft. In the middle adit, driving west, the lode is small; distance worked, 28 fms. 4 ft. 1 in. In the surface sinking in Gladstone's shaft, the lode is small; distance worked, 12 fms. 4 ft. 6 in. We have two men stripping down the side of the 60, west on Wilson's lode, carrying a width of 4 ft.; worth 8l. per fathom. These men are working about 4 fms. east of the cross-course; and, judging from the appearance of this part of the lode, we think the main part of the lode is standing, west of the cross-course. We have two men stripping down the side of the 60, east on Wilson's lode, and are breaking good quality tinstuff. Our steam stamps work very well, and we shall commence stamping on Monday for regular stamping. Our batch of tin this time is very small, owing partly to scarcity of water; and our levels have not been producing so good-quality tinstuff. We sold to-day 5 tons 12 cwts. 0 qrs. 25 lbs. of tin, at 44l. 10s. per ton=249l. 14s., the amount I have ordered to be paid into the bank.

WEST MILWR.—Wm. Francis, July 11: I am glad to report that the appearances in the cross cut, south from West Meadow shaft, are more encouraging for cutting a main lode than I have yet seen them from the commencement, the entire rock being threaded with strings of spar, and of a most congenial character.

WEST PATELEY BRIDGE.—D. Williams, July 17: Good progress is being made in building office, smithy, and carpenters' shops. The lode in the No. 2 stope has further improved, carrying a leader of solid lead ore, worth at present 12l. per fathom. The lode in No. 1 shaft is worth 9l. per fathom for lead ore. Other points without any change to notice.

WEST TANKERVILLE.—A. Waters, July 20: We are cutting through to the hanging-wall of the lode in the 75 and adjoining shaft, and so far find it worth 1 ton of lead ore per fathom. The 63 fm. level south is twitched up a little, present value being 1½ ton per fathom. No. 1 stope in said level south is worth 1 ton per fathom. No. 2 stope 1 ton per fathom. No. 3 stope 3 tons per fathom. No. 4 stope 1 ton per fathom. The 50 cross-cut east is not yet through the big, or No. 2 caunter lode. No. 1 stope in said level is worth 1½ ton per fathom. No. 2 stope is also worth 1 ton per fathom.

WEST WHEAL TOLGUS.—July 19: Taylor's shaftmen have completed the standing-lift in the 135, which is working all right, and preparation is being made for sinking below. We are glad to say that the lode in the 135 end, which is just under No. 1 winze, is better, yielding 2 tons of good ore per fathom; last Monday there was no ore in sight. There has been nothing done in the winze since my last report. The lode in the 125 end is looking very kindly, with a little ore; we shall expect something better in this end soon, as there is a shoot of ore in the 115, a little before this end. The lode in the 115 and 105 west is a good size, but unproductive. The lode in the 95 end is a little improved, and is again yielding saving work. We think we shall set a rise in the back of this level on Friday to prove the little ore ground recently passed through and for ventilation; this rise we hope will enable us to put the 95 through to Richards's shaft. Richards's shaftmen are progressing tolerably well. The lode in the 85 fm. level is still large, yielding 2 tons of ore per fathom. The other ends at this shaft are without alteration, but still poor. Our sampling yesterday was 348 tons of ore. The quality is pretty good.

WEST WYE VALLEY.—John Kitto, July 14: In consequence of the water rising in the mine (owing to dry weather) comparatively little work has been done underground during the past month, with the exception of that at Brooke's shaft; here we have made very good progress, and have got it down 11 fms. below the shallow adit level, or half-way between this level and the 26. Here we are cutting lodge in order to draw the stuff from this level with the machine, and in doing so have intersected the south part of the lode, which is of the most promising appearance, and showing strong spots of ore. We shall not stop the sinking to prove the lode at this point, as our chief object is to get this shaft down to the level of the 26 fathom engine-shaft with as little delay as possible. We shall be ready to resume the sinking again in a few days. We are getting on very well with the surface works, and particularly with the large reservoir, and in another week or so shall close up a part of the embankment sufficiently high to contain a large quantity of water, which I hope will enable us to carry on our underground operations throughout the remainder of the summer, and when it is finished I think we shall be able to command a full supply sufficient to carry us over the dryest season.

WHEAL CREBOR.—J. Andrews, July 15: The following was our setting on Saturday:—To drive the 120 cross cut south, by four men, at 12l. per fathom. To drive the 108 east, by four men, at 6l. 10s. per fathom; lode 2 ft. wide, yielding a little copper ore and mundic, but not enough to value. To drive the 72 east, by two men, at 8l. per fathom; here we are carrying 4 ft. of the south part of the lode, which is composed chiefly of quartz, capel, mundic, and white iron. To drive the 48 east, by four men, at 6l. per fathom; lode large, and yields occasional stones of ore. No. 1 stope, in back of the 48, by four men, at 70s. per fm.; lode 5 ft. wide, worth 15l. per fathom. No. 2 stope, in the back of the same level, by six men, at 3l. per fathom; lode 6 ft. wide, worth 30l. per fathom.

WHEAL GRENVILLE.—T. Hodge, July 19: The following bargains were set on Saturday last:—Western Shaft: The 160 to drive east, by six men, at 12l. per fathom; the part of the lode carried is worth 7l. per fathom. The 160 to drive west, by two men, at 10l. per fathom. The 150 to drive east, by four men, at 8l. 10s. per fathom, worth 10l. per fathom. To shoot out the lode to its full width, at a point just behind the 150 east end, by two men, at 6s. 9d. per ton. To stope the bottom of the 150 east level, by six men, at 6s. 9d. per ton, worth about 8l. per fathom. To stope the back of the 150 west level, by four men, at 6s. 9d. per ton, worth 7l. per fathom. To stope the back of the 150 east level, by four men, at 7s. per ton, worth 8l. per fathom. To stope the bottom of the 130 east level, by six men, at 6s. 9d. per ton, worth 6l. 10s. per fathom. To stope the back of the 130 east level, by eight men, at 7s. per ton, worth 9l. per fathom. The 130 to drive east, by four men, at 8l. per fathom, worth 7l. per fathom. The 130 to drive west, on the old lode, by two men, at 4l. per fathom.—North Shaft: The 140 to drive east, by four men, at 11l. per fathom, worth 12l. per fathom. The 140 to drive west, by two men, at 11l. per fathom, worth 10l. per fathom. To sink Rodda's winze, below the 130, by four men, at 11l. per fathom. To stope the bottom of the 130 east level, by four men, at 8s. per ton, worth about 8l. per fm. To stope the back of the 130, east of rise, by four men, at 7s. per ton, worth 6l. 10s. per fathom. To stope the back of the 130 east level, by two men, at 6s. 9d. per ton, worth 7l. per fathom. The 130 to drive east, by two men, at 9l. per fathom, worth 12l. per fathom. The 130 to drive east, on the old lode, by four men, at 6l. per fathom, worth 4l. per fathom.—Tribute: A pitch in the back of the 120 east, to two men, at 12s. in 1l. A pitch in the back of the 66 east, to two men, at 12s. in 1l. A pitch in the back of the 66 east, to two men, at 12s. in 1l. A pitch in the back of the 66 east level, to two men, at 10s. 6d. in 1l. A pitch in the back of the 66 east, to two men, at 9s. in 1l. A pitch in the back of the 54 west, to two men, at 12s. 6d. in 1l. A pitch in the back of the 80, to two men, at 13s. 4d. in 1l. A pitch in the back of the 66, to four men, at 12s. 6d. in 1l. A pitch in the back of the 100, to two men, at 12s. in 1l. A pitch in the back of the 80 east level, to two men, at 12s. 6d. in 1l. A pitch in the back of the 100, to two men, at 13s. 4d. in 1l. A pitch in the back of the 120, to two men, at 12s. 6d. in 1l. The tributers be paid 42l. per ton for black tin.

WHEAL KITTY (St. Agnes).—Stephen Davey, Richard Harris, July 15: New Shaft, Pryor's Lode: We are pushing on the driving of the 154 cross cut north, as we have not yet struck the north wall of the lode, which is producing a little tin, but not sufficient to value. The lode in the 142, driving west of shaft, is 4½ feet wide, and worth for tin 12l. per fathom—a fine-looking lode. The lode in the 142, driving east of shaft, is 2 ft. wide, and worth for tin 10l. per fathom. In the rise in back of the 142, west of shaft, we have met with a gossan, which has moved the lode a little to the south; up to this point the lode is worth for tin 10l. per fathom. The lode in the 130, driving west of shaft, is 2½ feet wide, and worth for tin 16l. per fathom. The lode in the 65, driving west of shaft, is 4 ft. wide, and worth for tin 6l. per fathom. The winze sinking below the eastern adit, is suspended for the present in consequence of an influx of water. We have a pare of men clearing and repairing Sunny Corner shaft; in several places the ground has become disintegrated, and requires timbering; when completed we shall at once commence operations in the 12, east of said shaft, in order, if possible, to effect a communication with the winze sunk below the eastern adit level. The lode in the 100, driving west of engine-shaft, is improved, being 2½ ft. wide, and worth for tin 9l. per fm. There is no change to report in the 90, east of engine-shaft.

WHEAL RUSSELL.—J. Bray, July 20: The appearance of the lode in the 25 is more promising than when last reported. The lode in the stope, west of shaft, above the 40, is worth 20l. per fathom. No other improvement. We are busy preparing for next sampling.

WYE VALLEY.—J. Kitto, July 15: I have much pleasure in being able to inform you that the lode in the adit level east has much improved during the past month, and that we have lately been getting some splendid stones of lead ore, similar in every respect to what we have had from our best bunch in the 10 fm. level, and I believe we have only to get a little deeper here to find ore in very large quantities. The 22 east is improving daily. We have passed through three branches of ore in the cross-cut similar to what we had on the south part of the lode in the 10 above. This cross-cut has completely drained the water from the winze sinking below the 10, so we may now expect to be fairly into the great run of ore very quickly. Other places are without change, but everything is progressing satisfactorily, and our sale for this month will be 60 tons of lead ore instead of 40 tons.

WHEAL UNY.—Wm. Rich, M. Rogers, Wm. Bennetts, July 15: The cross cut north, in the 160, east of King's shaft, carries small branches of tin; we think the main part of the lode is ahead. The 110 end east is worth 8l. per fathom. The 120 east is worth 10l. per fathom. The rise in the back of this level is worth 8l. per fathom. The 140 east is worth 1[illegible]l. per fathom. There is no lode yet intersected in the 150, north of Goodinge's shaft. The 150 west is worth 12l. per fathom. The rise in the 160, west of sump, carries a little tin.

HEAVY MACHINERY FOR THE COMSTOCK.—Messrs. Parke and Lacy, Market-street, agents for the Burleigh drilling appliances, and for general mining machinery and machinists' tools, are just shipping a lot of heavy articles up to the Comstock. Among them is a large lathe—7 ft. swing and 22 ft. bed—for George Emmet's Gold Hill foundry. There is also a 48 ft. planer, 16-ft. bed, for the same foundry. Parke and Lacey are also shipping two Burleigh drills and a large No. 4 air compressor for the Ward Mine. The superintendent of this mine says he is going to sink the shaft quicker than any similar work has been performed on the Comstock lode. With this object in view, he has purchased the heavy machinery referred to. The progress of the shaft will be watched with interest by mining men. An air compressor and tank are also being sent to the Julia Mine. The shaft in the Julia is the deepest on the lode. The mine has already several Burleigh drills and a compressor, and the pumping and hoisting machinery is of a capacity to work to a depth of 2500 ft. The present compressor furnishes air to the mine and three sets of drills, but the new compressor and tank are required for an additional supply of air.—*Mining and Scientific Press* (San Francisco).

EXCHEQUER.—Yesterday we had the pleasure of a call from J. S. Cooper, of Georgetown, Colorado, who has been examining the Exchequer and other mining properties in the interests of London capitalists. Mr. Cooper examined the Exchequer last fall, and on this visit he finds that very rich developments have been made in the mine since that time, and pronounces it a very valuable mine. Mr. Cooper is engaged in mining in Colorado in connection with English companies,

and he is a thorough-going mining engineer and expert—one whose opinion is worthy of attention. He is much pleased with our mining prospects, and predicts a great future for Silver Mountain. He left on this morning's stage for Virginia City, where he will look at the bonanza mines, and then on to Colorado. Manager Chalmers, of the Exchequer Mine and Mill, has perfected his arrangements for the erection of an O'Hara champion furnace at the Exchequer Mill, and Mr. O'Hara will arrive here next week with a corps of men to commence work. With the completion of this furnace we look for the inauguration of better times in Alpine.—*Alpine Chronicle* (June 24).

FOREIGN MINES.

ST. JOHN DEL REY MINING COMPANY (Limited).—Advices received June 30, 1876, ex Mondego (s.), dated Morro Velho, June 1:—

The produce extracted from the mineral treated during the second division of May, being a period of 11 days, is as follows:—

	Ozts.	Tons.	Ozts. per ton.
From mineral treated	14,449·0 from	2057 =	7·024
Re-treatment	1,066·0 ,,	— =	·518
Total	15,515 0 ,,	2057 =	7·542

Equal to ..... 1788·6271 ozs. troy = ·8695 oz. per ton.

The foregoing is a little better yield from the mineral than was obtained in the first division of May, though not so good as was extracted in the second division of April.

The general health of the establishment continues to be pretty good. During the past week, however, we have several cases of influenza and bronchitis, demanding prompt medical treatment.

Advices received July 17, 1876, ex Elbe (s.), dated Morro Velho, June 17:—

GENERAL OPERATIONS.—Throughout the past fortnight our general operations have been carried on without any interruption, excepting that caused to the regularity of the attendance of our free borers by the observance of some holidays. The attendance on the whole has been rather higher than heretofore, and the general work of the establishment has been steadily prosecuted during the above period. As yet we have a very fair supply of water for working the general machinery both in the mine and at surface.

PRODUCE FOR THE MONTH OF MAY.—The produce extracted during the month of May has amounted to 43,322·8 ozts. It has been derived as follows, viz.:—

	Ozts.	Tons.	Ozts. per ton.
From mineral stamped	40,195·5 from	5554 =	7·237
Re treatment	3,127·3 ,,	— =	·563
Total	43,322·8 ,,	5554 =	7·800

Or 4994·4142 ozs. troy from 5554 tons = ·8993 oz. troy per ton.

Nearly 500 tons more mineral have been reduced in May than in April, and though the standard yield is lower 7·8 per ton, as against 8·045 obtained in April, still the produce is higher by 2323 ozts.

COST AND PROFIT.

The produce for May being ...	43,322·8 ozts.	
Deduct loss melting into bars ...	299·1 ,,	
	43,023·7, at 7s. 9d. per olt. =	£16,671 13 8
Cost		7,002 11 2
Profit for May		£ 9,669 2 6

The cost for May is upwards of Rs.2000 more than it was in April. The exchange is ½d. higher, and against the account for May, though from larger produce, it shows an increased profit of about £80.

MINE DEPARTMENT.—A moderate amount of work seems to have been performed in this department in May. In the latter part of the month stoping down the mineral from the sides somewhat retarded the sinking.

During the past fortnight a full force has been employed on the timberwork, and some considerable labour spent in the improvement of the kibble ways in the excavation. The stoping of the mineral from the sides of the excavation is being continued with an increased force of borers, which have been obtained since the end of May.

The driving westward has been continued pretty regularly, but no attempt has yet been made to open out the mineral in that section. The more imperative mine duty, clearing down the walls of the excavation, concentrating all practicable force on the timberwork, and the improvement of the hauling ways in the excavation, demand as much attention and force as we can supply, keeping in view at the same time the raising of mineral for the supply of the stamping mills.

The subject of opening out the mineral in the western section of the mine shall not be lost sight of, but the above duties, until we augment a little more our mine force, preclude us from entering upon the desired explorations. The timber work which, as I have already stated, is much in arrear, is an all-important part of the mine duty, and therefore demands immediate attention.

REDUCTION DEPARTMENT.—The stamping mills have been pretty fairly supplied with mineral since the beginning of the month, and though not driven at a fast rate the stamps have so far been kept steadily at work.

A separation of the mineral is being effected with the view of affording better opportunity for the treatment, seeing there is so very much mixed mineral and a good deal of killas, necessarily quarried with the poorer mineral, now being taken down from the sides of the mine walls.

GOLD EXTRACTED TO DATE.—The produce extracted during the first division of June, being a period of eight days, amounts to 12,331·2 ozts. It has been derived as follows:—

	Ozts.	Tons.	Ozts. per ton.
From general mineral	11,497·0 from	1283 =	8·963
Re-treatment	834·2 ,,	— =	·648
Total	12,331·2 ,,	1283 =	9·611

Equal to ..... 1421·5866 ozs. troy = 1·1080 oz. per ton.

The above is rather better produce than was extracted in the first division of May, and considering the large proportion of mixed mineral now being received from the mine, the yield, on the whole, may be considered satisfactory.

The gold troop was dispatched from Morro Velho on June 13 with 18 boxes containing 53 gold bars, weighing in all 84,052·9 ozts.=307·494 lbs. troy. N.B.—The gold has duly arrived.

The following telegrams have been received:—

On June 20, dated Rio de Janeiro 19th.—"Produce, eight days (first division of June), 12,350 ozts. Yiel 1, 9·6 ozts. per ton."

On July 10, dated Rio de Janeiro 6th.—"Produce, 11 days (second division of June), 12,350 ozts. Yield, 7·1 ozts. per ton."

On July 17, dated Rio de Janeiro 12th.—"Produce, 30 days (month of June), 37,000 ozts.=14,337. Yield, 7·7 ozts. per ton.

RICHMOND CONSOLIDATED.—Telegram: Week's run, $62,000.

—R. Rickard, June 30: The shaft is down 100 ft. below the 800 ft. level, and we shall sink it 18 ft. more for a well before beginning the station for the 900 ft. level. The ground in the 800 ft. drift is harder than it was last week, still not hard enough to prevent us from making good progress in drifting. We have not begun sinking, as intended, on the small body of ore struck in the 800 drift, as there is not air enough to work more men than requ red for working the main drift. Nothing new in the 700, and the stope is about the same. The cross cut in the 600 has struck a very good body of ore of high grade, and we are now widening on it; this will increase the value of the ore, and consequently the out turn of the furnaces. There is no alteration in the stopes, they are looking about the same. The winze on the west side of the hill is still in ore. We have sunk about 30 ft. in ore below the 700 ft. level, and the bottom of the winze in good ore.—Smelting: The ore smelted during the former part of the week was of very low grade, it has improved, and the furnaces will do better work than they have for several days past.

GOLD RUN.—J. A. Stone, June 29: My last letter to you was on the 20th inst., since which I have made fair progress, but not so good as I would have done if the Miners' Ditch Company's main flume had run well as formerly. I have lost considerably by having to shack up and run clear water to clear the sluice. The Miners' Ditch Company put their iron ripples too far apart, and I fear their sluice never will run well until they take them out and put them in closer. I think they will have it to do. I shall change my waste water to morrow, and run it through the old Little Giant, which is set, so I can throw the water down to the head of the incline. I expect to wash the shaft down within the next two weeks, and think there will be but little danger of filling after that.

CEDAR CREEK (Gold and Water).—Telegram from superintendent: Total returns for month $15,750; total running expenses for the month, $10,750; Yankee tunnel driven during the month, 130 ft.

CEDAR CREEK.—Col. T. B. Ludlum, June 22: The Pacific claim has continued washing without interruption. We are now running on the reservoir ground. All previous runs this season, excepting the first one, were made on the Holmes' claim. The Gold Run claim also continues washing, and is working to very good advantage. The gravel is not rich where we are now washing, but is of such a character that we can remove it very rapidly. The Central claim is still idle, as I can realise more profit at the present by using the water elsewhere. I expect, however, to resume washing therein in a few days. The Yankee and Balger claim (I am running them as one) is not doing very well. The gravel on the run, as I have often written before, is very poor, so much so that the parties who drifted the lead found this so unprofitable that they left it, and we are not yet enabled to wash into the hill owing to the immense rock slide coming down so fast. All, however, is being done that water, powder, and labour can do. We are washing but ten hours per day. The Yankee Tunnel is being driven with all possible speed. The rock last week became quite hard again, but has since improved, and is now quite favourable. During the week ending June 17 we worked 10 shifts, fired nine face shots, and advanced 26 ft.—The Baker Shaft: The work on this shaft has been carried on since the 1st of the month. The hoisting and pumping machinery is in place, the pipe is laid, and everything ready for sinking without delay. Thus far we have only worked one shift in the shaft, but I intend to commence with two shifts on Monday next.—Water Supply: Our main ditch is carrying its full capacity; our lower ditches, however, as I have before written, are dry, and our supply is limited to our main ditches, the water from which I am utilising where it is most profitable.

EBERHARDT AND AURORA.—The directors have received 20 silver bars, valued at 4000l.

JAVALI.—The directors are in receipt of advices from their manager, under date June 6: During the last month the mill worked 23 days, crushing 1520 tons of quartz, yielding 127¼ ozs. of gold, at an average of 5·4 dwts. 15 grs. per ton. The remittance is valued at 1170l. The expenses were 568l., including 60l. on capital account. Capt. Solins reports a fresh discovery of manta. He is well satisfied with the working of the new steam engine, and hopes soon to be able to make better remittances. Labour is somewhat scarce. It is expected that the tailing-mill will be ready by the end of July.

SANTA BARBARA (Gold).—Mr. Hicke, Pari, June 12: During May 1098 tons of mineral were stamped, yielding 3 321 ozts. per ton, or a total of 34 7 ozts. of gold, which, valued at 8s. 6d. per oit va, amounts to 1549l 19s. 6d. as the estimated value of the produce for the month. The mine working cost for the same period was, at Exchange, 25¼d., 969l. 6s. 1d., thus leaving an estimated profit of 580l. 13s. 5d. for May. The capital expenditure during the month for Senzala, No. 5 stamps, and new powder house amounted to 171l. 16s. 2d.—Mine: There had been a slightly adverse change in the aspect of the lode since the previous month. The shaft was sunk 1 fm. 2 ft. 6 in. during May, the lode in the north end of the south end it is fully 8 ft. wide, and producing fair quality stone. In the adit and No. 3 stope the lode continued 10 ft. wide, but the upper part of No. 2 stope was not looking so well, owing to its being intermixed with hornblende and killas. The quantity of stone raised during the month amounted to 1362 tons, of which 264 tons were rejected as refuse stone, and 1028 tons treated at the stamps. Average quantity of stone raised per borer for the month, 26 6 tons.

CHONTALES CONSOLIDATED.—The directors have advices from their manager, dated June 5, who reports: We have treated during the past month 522 tons of ore, from which we have obtained 112½ ozs. of gold, being an average of 4¼ dwts. per ton. The cost for the month has been 406l.; value of gold, 290l., showing a loss of 116l. The amount included in the above cost and fairly chargeable to construction account is 7 l. 5s. We have saved during the past month about 119 tons of partially concentrated tailings, which will give a profit, when treated, of 83l. The irregular supply of labour, owing to threatened war, has retarded our work greatly during the past month. As the rainy season is now setting in again I hope to give more favourable returns next mail. There has been only one important change during the past month. In the No. 3 level at Estrella, which has opened out well, and contains a payable amount of gold. The winze we have been putting down in the bottom of San Sebastian main level I have suspended for the present time, owing to having some heavy showers lately. There is a magnificent lode in the bottom, and rich in gold. I have opened also a new place (San Felipe); it is the eastern portion of Santo Domingo lode; the quartz is poor, but when we want quartz in the rainy season it will be a great help. I have had some men working at Consuelo deep level. We have been putting in new guides in the stamps, re-fixing the coffers, trimming the tappets, and re roofing a portion of the Santo Domingo mill. The water has been very slack during the greater portion of last month.

SAN PEDRO.—Wm. Phillips, June 1: The 150 end driving through the Manto, south of west, by four men, at $15 per metre; this end is nearly solid with ore, but so much mixed with mundic that it will only produce 1¼ ton of 10 per cent. ore per fm. This end is the most solid we have seen since the change, and from the nature of the ore I judge we have very good indications of cutting solid bronce in depth. The 122 is without change. The 110 is also without change. The stope in the back of the 88 will produce 7 tons of 20 per cent. ore per fathom, and is still 12 ft. wide and 30 ft. long. The stope in the bottom is not so productive, as we have got into soft ground mixed with black sand and peach; will now produce 4 tons of 23 per cent. ore fathom. The ore when dressed is of better quality than when hard. We have on an average about 20 men employed during the month in the back and bottom. The chiffon sinking between this level and that above, by the side of old works, by two men, at $7 per metre; is producing good stones of ore. In the 47 the chiffon sinking by side of old works, by two men, at $8 per metre; has improved since my last, and will now produce 1 ton of 25 per cent ore per fathom. The cross-cut driving at this level towards Cuba is without change; ground easy for driving.—Cuba Mines: The chiffon sinking below the adit level has improved since last report, and will now produce 1 ton of 22 per cent. ore per fathom. The machinery, &c., underground and at surface is working in a satisfactory manner. The financial agent reports that he has about 100 tons of ore ready for sale of from 18 to 20 per cent.

NEW ZEALAND KAPANGA.—J. Thomas, June 3: The cross-cut has been driven 5 fms. during the past month; total length driven, 66 fms. A more favourable change of ground came in the end when last reporting, which has continued all the month, enabling more way to be made than has been effected the last two or three months. The cross cut is still in the capel of the lode, which is hard and tough blasting ground; the end is getting very wet; at times streams of water forced out, reaching a distance of 20 ft. from the face, making such noise with the pressure that it can be heard the length of the level. At times the men can scarcely work with the quantity of water coming after blasting. From the changing appearances of the ground, and the quantity of water now being met, it is impossible we can be more than 10 or 12 ft. away from the lode.

SIERRA BUTTES (Gold).—The result of the working at the Sierra Buttes and Plumas Eureka Mines for June:—Sierra Buttes Mine: Receipts, $33,018; total California expenses, including cost of mining and milling, $22,187.—Plumas Eureka Mine: receipts, $10,173; total California expenses, including cost of mining and milling, $16,319; tons of sulphurets saved, 74; tons of sulphurets amalgamated, 80; yield per ton, $37.

FRONTINO AND BOLIVIA.—By an extra mail the directors have received advices from Mr. Robert White, under date June 3 last. The remittance for the month of May will amount to 2609; and, according to the note to Mr. White's subjoined report, the profit will be $7000 (1166l. 13s. 4d.), from which will have to be deducted the general expenses, in Medellin and London, amounting to about 150l., leaving the net profit for the month at 1097l. 13s. 4d. The mine accounts will be forwarded by the next mail. In his report Mr. White states that the mines are in a very satisfactory condition, the only drawback being the temporary delay in the completion of the Silencio pumpwork. The notable points in Mr. White's report are, that in the Cecilia Mine the richness of the lode (which is from 12 to 15 ft. wide) is equally distributed and very uniform, the amount of water available for the stamps being the only question; while at the Palmichala Mine, Mr. White estimates that the company may safely expect that the net profit from it for the month of August, when the mine will be in the company's own hands, will amount to $2500 (416l.).

MALPASO (Gold).—The company have received advices from their superintendent, dated June 9, containing the following particulars of the clean up, the telegram announcing which was received on the 20th ult:—The clean up in question was the result of 542 hours washing, which was accomplished between April 23 and June 3, the time from the previous clean-up on March 18 to April 22, having been occupied by the joining of the new and the old ditch. The following is the net result of this clean-up:—Clean-up June 3, $8928·10=£8650·8; cost at mine from March 18 to June 3 (average of the last seven months), $4400; leaving profit $4250 8, or—say, 700l. The superintendent refers to the fact that this return has been increased by the cleaning up of whole sluice, which has not been done for the last two months.

MALABAR.—G. B. O'Reilly, June 9: Since our clean up, of which note and produce was sent by last mail, we have been employed in preparations to put in some 200 ft. of sluice both above and below our bed-rock cut. This addition is indispensable in order to carry us over the comparatively flat ground which intervenes between our outlet and the banks. In order to lay this sluice we have had some heavy work to do cutting down the trench for same by hand, through soft bed-rock and pipe clay. This we have thought it prudent to do in order to economise all our grade should we find the ground dipping east, as we have every reason to suppose that it does. The trench or cutting for laying 200 ft. of sluice is at date very nearly completed, and many of the sills for the sluice are laid down, so that we hope by the end of the present month to have all ready for making our first start on the new ground before us, where our prospects look brighter than in any other direction. No effort has been spared to push the work on as speedily as possible, but at the same time we have kept in view the principle of having it thoroughly and efficiently laid down, so as to avoid once for all future expenses and vexatious changes. At the present time we are working from 25 to 30 men, but should our banks prove free from obstacles we can reduce this number considerably in the future. Somewhere about the beginning of July we ought to be ready to begin washing, and if nothing unforeseen occurs we anticipate a clean up by the end of August. Much will depend, however, on the nature of the ground; if it is comparatively free from pipe-clay and boulders and moderately productive in gold we ought to do well, as we shall then be in better shape for washing continuously in a good supply of gravel than we have ever before been, but in order to resolve these questions satisfactorily it is indispensable to make at least one run on the banks now before us.

NEW ROSARIO (Silver).—Mr. Cumins (June 13): Providencia Mine: My last letter conveyed to the board the pleasing intimation that we had, even prior to our anticipations, met with ore in the sinking of the shaft. At the time of writing the lode had become somewhat harder, and in first week of the last fortnight the men did not sink more than 1 vara 45 cts., through ore of the same quality as yielded by the previous sinking. As the shaft was still being carried perpendicular, and was in consequence sunk on only a part of the lode, I thought it desirable to stope down the eastern part to see whether the ore continued throughout, or only in the portion we were carrying with the shaft. During the last week the men stoped 4 varas, two of which poor, being similar to what we had passed through before meeting with ore; and the other two with ore of a similar quality to that in the western side of the shaft. As I was then satisfied, the men were ordered to continue sinking, and finished the week by sinking ½ vara. The ground sunk is, of course, too little to make any important change apparent, and I have, therefore, to report that the lode is looking the same as when I last wrote. Owing to the size of the lode (about 10 ft.), Capt. Skewis and I were under the impression that it formed the two lodes that we had in San Manuel, but on making a careful inspection the idea suggested itself to us that one of the lodes might be at the west of the shaft, and I determined to cross-cut and ascertain whether it was a fact. I am glad to inform the board that we were not disappointed. The men drove first through about 3 ft. of horse, and then cut another strong lode, which promises from its formation to be of equal size to the one we are sinking upon; the lode is hard, and bears a similar calcareous rock to that in the shaft. As it is not yet a week that the men have been driving they have not penetrated more than about 18 in., which is not enough to make a discovery. The lode has a very promising appearance, and has puntas all over the part as yet visible, but not sufficiently to give value to the ore. My next letter will give more information about it.—Silver: The enclosed papers will show that the 641 mares of silver forwarded to Mexico realised $56 5·58 net.

EXCHEQUER (Gold and Silver).—Mr. L. Chalmers, June 26: The engine shaft is down to the 386, and in much better working rock. The north drift at the 300 is in 138 ft. from cross cut. The ledge being almost all in hanging, I cannot yet say what it looks like. The north drift at the 200 is in 464 ft., the lode is from 4 to 5 ft. wide, fine white quartz, with specks of ruby, but as yet not very rich. I have only one shift here, but they drove 10 ft. last week. I must keep the 200 and 300 drifts running. The stope at this level looks well; I have had two men stoping all the week. I am sacking the richest part of the pay streak. I expected eight stopers from Grass Valley on Friday, but they did not make their appearance. I hope they will arrive to-night.—Mill: I have had O'Harra here since I wrote you on the 19th, and have concluded with him for a 25 ton furnace, as per agreement—copy herewith. He has gone to San Francisco to get the ironwork. I have all the old buildings down, and the foundations excavated for the new furnace and buildings, but I find it very difficult to get millwrights. Now, if O'Harra proves his furnace equal to what he claims for it, or anything approaching that, and I do not see why he should not, our roasting, including both wood and salt, will cost us $3 only, and the annexed figures give only $4 50 per ton, for crushing, amalgamation, and in short conversion into bullion—*i.e.*, when we can run 20 tons in 24 hours, which we shall do so soon as our furnaces are erected:—Two dry kiln tenders, $6; two battery feeders, $8; one fireman, $6; two amalgamators, $8; two carmen, $6; one blacksmith, $4·50; one carpenter, $5; two engineers, $9; loss of quicksilver, $13; wood, six cords at $3, $18; sundries, $6 50; total cost per day, $90 of 20 tons, equal to $4·50 per ton; add roasting, $3 per ton: then total cost, $7·50 per ton. My chief objection to the Stetefeldt was the cost of roasting—$11 to $12 alone.—Next comes transportation: If my plan of sluicing be adopted the cost will be reduced to the interest on the money expended on the quartz-breaker at the mine, and on the sluice-boxes from mine to mill, and $6 per day to feed. I may mention here that on maturing this project I find so much expense in crossing the Adolphus canyon caused by lofty trestle work that I have abandoned the idea of bringing the sluices over the mountains, and propose laying them along the road until I get near Silver Mountain, when at the proper elevation I shall leave the road above Boss Cabin, and take the best grade I can get to the mill. I shall require more boxes, but will save all the difference in hauling on place of packing, and also on laying. Besides being on the roadside they will be more under one's eye in case of accidental break out. So much for transportation. The cost of mining depends so much on the nature of the ore, the number of men you can work in the stopes, and the capabilities of your engine, that it is difficult to estimate. To reduce this to a minimum, especially when (in consequence of sinking) we can use only one compartment of the shaft, we must have an engine which will run the ore or dirt up as quickly as possible. Our present engine has done its duty. Our mill engine is not equal to the additional stamps, and is now on the way to San Francisco (I should have said its cylinder and lighter parts) to be converted into a hoisting-engine for the mine, with a power equal to 1000 to 2000 ft., and a speed of 400 ft. per minute. The old rig can be sold.

CAPE COPPER.—Capt. Tonkin writes:—The 80 south (on the bunch of ore lately passed through in the eastern driving) is looking remarkably well, producing fully 7 tons good quality ore per cubic fathom. The stope in back of the same level also continues to yield well. The winze below the 80 is passing through a good bunch of ore. This sinking has now reached a depth of 7 fms., and its present yield is 7½ tons per fathom. The 68, east from No. 13 winze, is just now rather poor, but I believe we shall shortly have an improvement at this point. There is no other change of importance. The Tacna has arrived at Swansea. The Lynwood and Aneroid, to load together about 80 tons, have arrived at Port Nolloth: 515 tons of ore were sold at public ticketing on the 18th inst., at an average of 14s. 1d. per unit, realising approximately 10,100l.: 700 tons of ore have been put forward for sale on Aug. 1.

PANULCILLO.—F. G. Welch, June 2: Our production account for the past month gives about 39,000 quintals metrico at 5½ to 6 per cent. This would have been greater had there been less sickness amongst the miners; rain having fallen we have nothing more to fear from this source. For this month I cannot anticipate more than 40,000 quintals metrico, this in consequence of the head wall and backs of our stopes proving very changeable, necessitating great caution and delays; this more particularly applies to the south stope—Mina Vieja—the lode here proving very rich and head wall very rotten. Preparations for drawing by the Romana shaft will be completed in a few days.

LUSITANIAN.—July 11: The lode in Taylor's engine shaft, sinking below the 120, is 8 ft. wide, composed of quartz and stones of ore in the western end of it. We are about to cut a trip plat at this shaft at the 100. In the 110 cross-cut, south of Basto's lode, east of River shaft the ground is still hard, and we have no lode as yet. In the cross cut north of Perez' shaft, at the 50, the ground is a hard, fine gneiss. The winze No. 100, sinking below the 180, west of Taylor's shaft (Basto's lode), is going down in a lode yielding 3 tons of ore per fathom. In winze No 101, below the 160, west of Taylor's, the same lode has improved to be worth 1½ ton per fathom. In the rise No. 102 above the 130, east of River shaft, the lode is 4 ft. wide, composed of quartz and stones of ore.—Levels on Basto's Lode: In the 190, west of Taylor's, the lode is producing 1 ton of ore per fathom, with rich grey ore and cobalt in it. In the 180 west the lode is yielding 1 ton of copper ore per fathom. The lode in the 170 is 4 ft. wide, composed of quartz, regular. The lode in the 150, east of River shaft, is 3 ft. wide, composed of soft and hard quartz. In the 150, west of the slide, the wall of the lode is very regular. In the 90, east of River shaft, the lode is rather disordered, but has a south wall and stones of mundic, and is letting out a stream of water. The lode in the 70, east of River shaft, is 1 ft. wide, composed of quartz spotted with lead. The trip plat at the 50, in this shaft, is now complete. In the 50, east of River shaft, the lode is 2 ft. wide, composed of flookan, quartz, and stones of ore, and in the 28, east of River shaft, the lode is 3 ft wide, of about the same character.—Carvalhal: The branch in the 60, driving west from the cross-cut, is 1 ft. wide, composed of loose and hard quartz, but no mineral. In the 30, north of great lode, west of incline shaft, on a north and south lode, the lode is 1 ft. wide, composed of quartz, mundic, stones of blende, and spots of lead.

FORTUNA.—July 12: Canada Incosa: The 120, west of O'Shea's engine-shaft, is not so productive as it was. The same level east is in a large strong lode, producing ¾ ton lead ore per fathom. The lode in the 110, west of Judd's shaft, is small and disarranged. The 30, east of San Carlos, is passing through a bar of ground in which the lode is much disordered. The 40, west of Abercrombie's, is in a powerful lode, yielding 1 ton per fathom. The lode in the same level east is small and unproductive. In the 60, west of San Pedro's, the lode has improved, and yields 1½ ton per fathom. The lode in the 70, east and west of this shaft, yields ¾ ton per fathom. The plunger has been fixed at this level, and driving commenced. The 60, east of San Federico, is in a large strong lode, letting out water, but not containing much lead. The 110, east of Addis's shaft, is in a productive lode, worth 2 tons per fathom, and open and easy for driving. In the 90, east of this shaft, the ground is hard, and the lode unproductive. The lode in the 80, west of Kennedy's shaft, is strong and regular, with good stones of ore, worth ½ ton per fathom. The 90, west of this shaft, continues unproductive. The 90, east of Caro's, is easy for driving, and throws open a good length of paying ground, worth 1 ton per fathom. The lode in the 80, east of this shaft, is very changeable, and is now passing through a shoot of ore, worth 2 tons per fathom. In Lowndes shaft, below the 90, the sinking has been hindered by the fixing of the plunger; the men are now again working regularly. The men in Abercrombie's shaft, below the 40, are getting on slowly; the lode produces ½ ton per fathom. The lode in Serrano's winze, below the 30, is much smaller than it was. The sinking of Addis's shaft below the 100 is commenced, and it is hoped that good dispatch will be made in getting it down to the 110.—Los Salitos Mine: In the 130 cross cut, south of Buenos Amigos shaft, a small vein has been cut, but we expect to find more lode farther south. The 120, west of this shaft, is in a small lode, yielding ½ ton per fathom. In the 110, west of San Carlos shait, the lode is split into unproductive branches. In the 130, east and west of Morris's engine shaft, there is no ore to value; in the latter end there are stones of ore. The lode in the 120, east of Cox's shaft, is disordered by a cross course. The 110, east of San Pablo's, continues to open good ore-ground, yielding 2½ tons per fathom. The 25, west of Swaffield's, has fallen off in value, and yields at present ½ ton per fathom. An unfavourable change has also taken place in the same level east, in which the lode yields 1 ton per fathom. The 35, west of Swaffield's, is opening fairly productive ground, worth 1 ton per fathom. The lode in the 45, west of the same shaft, is small and poor. The 55, east and west of Palgrave's shaft, are without improvement. The men from the 65, west of this shaft, are put to cross cut into the south side to prove if there be any lode there. In the same level east, the lode having failed, the men are put to cross-cut northwards. In the 35 cross cut, north of Palgrave's, branches have been intersected, and the lode is expected to be reached shortly. The 25, west of Peill's shaft, is in a large and powerful lode, yielding 1½ ton per fathom. The same level east is also in a strong lode, producing ½ ton per fathom. Savio's winze, below the 100, is in a very changeable lode, producing at present 1 ton per fathom. Marini's winze is holed to the 45. Oak's winze, below the 110, is in a compact and regular lode, yielding 1 ton per fathom. The full complement of mineral was returned in the past month, and the stopes are now without any change of importance. The works at surface are being kept on very regularly, and the machinery is in good working condition. We estimate the raisings for July—five weeks—at 460 tons.

LINARES.—July 12: Pozo Ancho: The lode in the 100, east of Warne's engine shaft, continues large, and yields 1 ton of lead ore per fathom. The lode in the same level west is also large, containing spots of ore. In the 85, west of Crosby's cross cut, the ground is hard and the lode small and poor. The 105 cross-cut, south of Peill's shaft, is without change. The 90, east of San Francisco shaft, is in a regular lode, worth 1½ ton per fathom. The same level west is in a lode worth ½ ton per fathom, and more favourable for driving. The 65, west of Peill's, is in a small and poor lode. The ground in the 55, west of this shaft, is changed, good progress is being made, and the lode yields ½ ton per fm. The 75, east of San Francisco shaft, continues unproductive. In the 65, east of this shaft, the lode has failed, but still produces ½ ton per fathom. It is expected that No. 206 winze will be holed to the 25 soon; the lode yields ½ ton per fathom. Nos. 207 and 208 winzes below the 75 are in lodes yielding 1 ton per fm. each. In No. 209 winze, below the 85, the ground is favourable, and the lode produces 1 ton per fathom.—Quinientos Mine: In the 90 cross-cut, south of Taylor's engine-shaft, we have cut the lode, which is composed of quartz, and spotted with lead ore. The 80, west of Taylor's, is in a regular, well-defined lode, yielding good stones of ore. The same level east is in hard, poor ground. The lode in the 65, east of the same shaft, is strong and open, yielding fine lumps of lead. The 65, east and west of San Carlos shaft, is without ore. The 80, west of this shaft, is improving in appearance, and yielding a little lead ore. The same level west is opening up good tribute ground, worth 2½ tons per fathom. The lode in the 45, east of Judd's, has a very kindly appearance, worth ¾ ton per fathom. There is no change in the 32 cross-cut, north of this shaft, since last report. The sinking of Addis's shaft below the 65 is being pushed on as fast as possible. Good progress is being made in Judd's shaft sinking below the 55. Rega's winze, below the 55, is going down in a strong, powerful lode, worth 1 ton per fathom. Castilla's winze, below the 65, is expected to be holed in a few days. In Gallego's winze, below the 32, the lode is small and the ground hard. The yield is ½ ton per fathom. Corezuella's winze, below the 65, is in a large, strong lode, producing 1 ton per fathom.

LANESTOSA.—July 14: Asuncion: In the 130 metre level, driving north, the lode continues large, and soft calcareous spar, with veins of calamine matter, hold over the part driven on. In the same level south the ground is improved, the end now showing a mixture of dolomitic rock, flookan, and shale. In the adit, driving south, the lode is changed to clayey matter, with angular stones of calc spar and flinty limestone embedded. The footwall has polished markings, as if the lode had slipped vertically on it. A few men are searching the backs of the 30 and 40 metre levels, and are getting wages on lead.—Glanrafon: The 30 metre level, north of Peace shaft, shows no chance from the jointy silicious shale, except a small flookan vein on the footwall. The 30, south of this shaft, has yielded a few stones of carbonate of lead in the last few days. Work is much impeded at these levels by bad ventilation, the air being now so light that it is impossible to get it down the shaft naturally. A fan is just completed, which will soon set the matter right.—La Berta: Guillermo shaft, below adit, is passing through a large lode, composed of iron-stained silicious rock, carrying occasional stones of lead. Having had no rains nothing has been done to washing for the month.

ALAMILLOS.—July 12: The lode in the 60, west of San Francisco shaft, contains spots of ore. In the 50, west of San Felipe shaft, the lode produces good stones of ore below the side. The 40, west of the shaft, is in a well-defined lode, yielding 1 ton per fathom. In the 25, west of Abercrombie's, there is a good branch of lead in the bottom of the level, yielding ½ ton per fathom. The 40, east of Juan's winze, has improved, the lode yielding 1 ton per fathom. The lode in the 50, east of La Magdalena cross-cut, is small and poor. The same level west is in a very regular lode, worth 1 ton per fathom. In the 85 cross-cut, north of San Enrique shaft, a branch has been intersected, containing spots of lead. The lode in the 85, west of San Andriano's shaft, produces a little lead. The 60, east and west of San Victor's, is without ore; in the latter end the lode is letting out water. In the 40, west of San Carlos, the men are cutting into the south side to prove if there be a lode standing there. No lode has been met with in the 30 cross cut, north of Santo Tomas shaft, since last report. In the 40, east of air shaft, there is a small branch of lead, but not sufficient to value. The 50, east of Crosby's shaft, is in a small and unproductive lode. The 50, east of Judd's, is also without value. The lode in the 60, east of this shaft, produces a little lead, and the ground is softer. There is nothing to remark in the 70 cross cut, north of Judd's. In the 50, east of Judd's cross-cut, the lode is small and poor. The same level west will shortly communicate with Moreno's winze. The 30, west of adit shaft, continues to open productive ground, worth 1 ton per fathom. In the 30, east of Bigge's shaft, the lode is of no value. In Taylor's engine shaft the men have commenced to cross-cut south at the 100, and are making preparations to bring down the plunger from the upper level. Good progress is being made in Abercrombie's shaft, below the 25. Rega's winze, below the 40, is in hard unproductive ground. Marto's winze, below the 50, produces a little ore. Fernando's winze, below the 30, is in a large lode, producing a little lead. In Sanchez winze, below the 25, the lode is thrown north by the slide, and a cross-cut will be put out in that direction. Marquez' winze, below the 20, is in a small and valueless lode. Pedro's winze, below the 30, is being sunk through profitable ground, worth ¼ ton per fathom.

TRELEIGH WOOD.—At a general meeting of shareholders, held at the office of the company, on Wednesday (Mr. T. V. Smith in the chair), the accounts for three months showed—Balance in hand, 375l. 19s., and estimated balance against the mine, 1457l. 13s. 1d. There is still due 903l. 10s. 2d. by shareholders who have relinquished their shares, and proceedings are about being taken in the Stannary Court to recover the amount due. Capt. Hoskins reported that from 5 to 6 tons

of tin would be sold monthly, against a probable cost of 300*l.* for the same period. The mine is looking well, and a better price for tin would enable the company at least to meet the costs.

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, JULY 21, 1876.

	£	s.	d.	£	s.	d.
IRON.						
Pig, GMB, f.o.b., Clyde..	2	17	6–		—	
,, Scotch, all No. 1 ...	2	18	0–	3	8	0
Bars, Welsh, f.o.b. Wales	6	0	0–		—	
,, ,, in London.	6	15	0–		—	
,, Stafford., ,, .	7	15	0–	9	15	0
,, in Tyne or Tees ...	6	5	0–	6	10	0
,, Swedish, London ..	11	15	0–12	5	0	
Rails, Welsh, at works..	5	10	0–		—	
Railway chairs		—	—		—	
,, spikes		—	—		—	
Sheets, Staff., in London	10	0	0–		—	
Plates, Staff., in London	10	0	0–12	0	0	
Hoops, Staff.	8	15	0–10	0	0	
Nail rods, Staff. in Lon.	7	10	0–	8	0	0
STEEL.						
English, spring	14	0	0–23	0	0	
,, cast	25	0	0–45	0	0	
Swedish, keg.....	18	0	0–		—	
,, fag. ham.	19	0	0–		—	
LEAD.						
English, pig, common .	20	5	0–20	10	0	
,, ,, L.B.	20	10	0–		—	
,, ,, W.B.	21	0	0	22	0	0
,, sheet and bar..	21	15	0–22	0	0	
,, pipe	22	10	0–22	15	0	
,, red	23	10	0–24	0	0	
,, white	27	10	0–28	10	0	
,, patent shot ...25	10	0–		—		
Spanish.....	20	0	0–20	2	6	
QUICKSILVER.						
Flasks of 75 lbs., ware.	8	10	0–		—	
SPELTER.						
Silesian or Rhenish ..	22	2	6–	22	5	0
English, Swansea	23	10	0–		—	
Sheet zinc	26	10	0–	27	0	0

* At the works, 1*s.* to 1*s.* 6*d.* per box less for ordinary; 10*s.* per ton less for Canada; IX 6*s.* per box more than IC quoted above, and add 6*s.* for each X. Terne-plates 2*s.* per box below tin-plates of similar brands.

	£	s.	d.	£	s.	d.
TIN.						
English, ingot, f.o.b...	78	0	0–		—	
,, bars ,, ...	79	0	0–		—	
,, refined.....	81	0	0–		—	
Australian	73	10	0–		—	
Banca	77	0	0–		(nom.)	
Straits	73	10	0–		—	
COPPER.						
Tough cake and ingot.	76	0	0–		—	
Best selected	77	0	0–		—	
Sheets and sheathing .	82	0	0–	83	0	0
Flat Bottoms	84	0	0–		—	
Wallaroo	76	0	0–		—	
Burra, or P.C.C.	75	10	0–	76	0	0
Other brands	74	0	0–		—	
Chili bars, g.o.b.....	70	0	0–		—	
PHOSPHOR BRONZE.						
Bearing metal	£112	0	0			
Other alloys	£120	0	0–	140	0	0
BRASS.						
Wire	8½d.– 8¼d.					
Tubes.....	9		–12			
Sheets	8¾		–9¾			
Yel. met. sheath. & sheets.	7		– 7¼			
Nails composition.....	8½		–10½			
TIN-PLATES.*	per box.					
Charcoal, 1st quality ...	1	5	0–	1	6	0
,, 2nd quality...	1	2	0–	1	4	0
Coke, 1st quality	1	1	0–		—	
,, 2nd quality	1	0	0–		—	
Black .....per ton	17	0	0–	17	10	0
Canada, Staff. or Gla., at Liverpool	13	0	0–	13	10	0
Black Taggers, 450 of 14 × 10	30	0	0–		—	

REMARKS.—Our markets have not undergone any change for the better, but, on the contrary, not only does the demand continue quite as limited as before, but a further depreciation has taken place in the prices of several metals. There is an abundance of money, however, to be had at particularly low rates for all legitimate enterprise, and prices of metals are very moderate; but, notwithstanding these favourable circumstances, prices decline, and buyers cease to exhibit any confidence. Contracts are mostly for small quantities, for immediate use, and no one as yet seems to possess sufficient courage to operate for higher prices. No doubt there are many reasons for this prolonged stagnation in trade, but it would almost appear that the worst stage has at last been reached, and that some amendment must shortly ensue. The prices of metals now are not such as to interfere with consumption, and therefore an increase to some extent may fairly be expected, although but gradual. It is to be hoped that any improvement which may show itself will not be checked by any premature movement on the part of sellers in attempting to advance prices unduly; any spasmodic action of that kind would only defeat its own object. After so much prostration and exhaustion the recovery had far better be slow, and, if possible, rendered durable; it is not reasonable to expect that the progress can be otherwise than slow at first. A steady and gradual improving market would be decidedly the best means to restore confidence and establish prices on a sound basis. Of course so long as the Ottoman power is permitted to form a disturbing element in the East no general resuscitation will take place, and it behoves merchants to be extremely guarded in entering upon any extensive transactions. The affairs of Turkey are well known to be in a very critical state, and it may ultimately be found that there is no other solution to the question than dismemberment; and the sooner an understanding is come to the better, as our markets in the meantime remain unsettled, and everybody is kept in a state of suspense and apprehension. There have recently been some serious failures in the iron and tin-plate trade, but considering the heavy losses that must have been incurred, it is surprising they have not been more extended, especially amongst shippers and merchants.

COPPER.—The market has been weak, and prices have again fallen all round in English, colonial, and foreign. The firmness displayed by holders of Chili a short time since has entirely vanished, and they are now ready enough to realise at rates considerably below those formerly ruling, several hundred tons having been disposed of at as low as 70*l.* The charters of Chili produce during the first half of July are comparatively light, being 1600 tons only, and at any ordinary period would have excited the demand, and enabled holders to obtain rather better rates; but as yet it has failed to produce the slightest salutary effect. The prevailing opinion is still against prices, and it is certain that unless orders come forward larger than at present lower rates must be conceded; but as the Indian Exchange has slightly recovered, this may induce shipments of manufactured to these parts, and consequently arrest any further downward tendency for a time. Smelters are willing to take 83*l.* for 4 by 4 sheets, and perhaps something less for large quantities. Chili bars are obtainable to-day at 70*l.*, but holders in some instances ask 10*s.* more.

IRON.—Welsh and East Coast ordinary merchant bars are procurable at 6*l.* 15*s.* in London; but although this price is lower than has ruled for some time past, yet buyers are not eager to avail themselves of the reduction. The home demand, as well as the shipping trade, is particularly limited, and so severe a lesson have shippers had in sending to overstocked markets, and losses incurred by a falling Exchange, that they care not to venture more. The retrenchments that have been going on everywhere, both in this country and abroad, are telling very seriously upon dealers. Amongst the ironfounders and other consumers in this country the failures have been unusually large, and the credit once lost is difficult to regain. The iron-yard firms are not likely to increase their stocks until there is some degree of certainty that prices will not fall lower. There is no doubt that the markets could not have been upheld so long as they have been had not the English Government made such extentive preparations for war. The dockyards, and arsenals, and fire-arm factories, have all been very busy, and this has absorbed large quantities of material that would otherwise have found its way into our markets, and the reduction in price would have been greater. In Scotch pigs some slight fluctuation has occurred, but occasional speculation has preserved the market from falling quite so rapidly as could otherwise have been the case. This class of iron, however, is still comparatively high, and according to the average of previous years it would seem that there is room for a further fall; the shipments of 1875 are considerably below those of the previous year. Speculation under such circumstances at the present time is not advisable. Scotch pigs 56*s.* 6*d.*, mixed numbers cash, to day's closing price.

SHIPMENTS.	
Week ending July 17, 1875 ..... Tons	9,833
Week ending July 15, 1876	6,042
Decrease	3,791
Total decrease for 1876	57,299

LEAD.—The market is very quiet, and sales of any magnitude difficult to effect. English is obtainable at 20*l.* 5*s.* to 20*l.* 10*s.* per ton; Spanish, 20*l.* to 20*l.* 2*s.* 6*d.*

SPELTER.—In this metal the amount of business reported is of a trifling character, and at prices somewhat below those formerly quoted. Rhenish and Silesian, to arrive, have realised 22*l.* 2*s.* 6*d.* Hard has changed hands from 17*l.* 10*s.* to 17*l.* 15*s.* At public auction, on Thursday, 120 tons of zinc were sold at 26*l.* 10*s.* to 26*l.* 12*s.* 6*d.*

QUICKSILVER.—The enquiries for shipment to the East continue limited; but as nearly all the Italian in our market has been sold, importers of Spanish have advanced their price to-day to 8*l.* 10*s.*

STEEL.—The market keeps dull, both for English and foreign.

TIN-PLATES.—As the most pressing lots have been cleared off, prices have slightly recovered their late fall, and common cokes are now quoted 20*s.* per box.

TIN.—The smelters have made reductions in English to the extent of about 2*l.* per ton; but the orders are far from plentiful, and mostly for very small quantities. The present price does not appear to present any inducement for buyers to take more than for existing requirements. There is a slightly improved tone for foreign descriptions, and Straits and Australian have participated to the extent of about 10*s.* per ton. The late rise was looked upon as a very foolish step, and the rapid fall that succeeded exposed the shallowness of the movement. Such spasmodic action is generally attended with mischievous consequences, and only unsettles the market, and often prevents prices rising at a time when real and legitimate grounds are substantiated. The trade should still act cautiously in buying upon statistical matter as the late deliveries are, to say the least, mysterious.

THE IRON TRADE (Griffiths's Weekly Report).—Friday Evening: The price of g.m.b. pig iron on the Glasgow Exchange this afternoon was 56*s.* 6*d.* nominal; business was done this morning at 56*s.* 4½*d.* cash, the same as the price last Thursday. In makers' iron several brands are 6*d.* to 1*s.* 6*d.* per ton lower than last quoted. The following are the prices for No. 1:—Gartsherrie, 64*s.* 6*d.*; Coltness, 67*s.* 6*d.*; Calder, 65*s.*; Langloan, 66*s.* 6*d.*; Summerlee, 69*s.*; Monkland, 57*s.*, f.o.b. Glasgow; Glengarnock, 63*s.*; Eglinton, 57*s.*, f.o.b. Ardrossan; Shotts, 66*s.* 6*d.*, f.o.b. Leith; Kenniel, 58*s.* 6*d.*, f.o.b. Bo'ness. We have no change to report in the iron trade this week. Best iron is in moderate demand, and Yorkshire and Staffordshire brands, well known in the market, are fetching full list rates. The fact that all the smelters are losing money is very serious. It is rumoured that numbers of the furnaces remaining in blast in Staffordshire will soon be blown out. All the works in the neighbourhood of Tipton will have a holiday the whole of next week, it being Tipton wake, and as Bilston wake takes place the week afterwards a stoppage of the works in the Bilston district will, no doubt, occur for the Bilston wake. This will very much diminish the South Staffordshire output of iron during the next fortnight.

The Birmingham Exchange was very thinly attended, in consequence of the Royal Agricultural Society's show being held in Birmingham this week. We have no change to report in this trade on our market. A few orders have been given out since Quarter-day for best iron, but the competition for inferior kinds continues to increase, and prices for these sorts are weaker. The failure of Mr. Thomas Vaughan, of Middlesborough, has been announced this week. A meeting of the creditors took place at York yesterday, and we believe efforts will be made to carry on the works by the creation of a new company. We should ourselves think that in the present state of the trade it will be a difficult task for the gentlemen who have undertaken it to carry out to a successful issue.

Messrs. HARRINGTON, HORAN, and Co.—Arrivals here during the fortnight of West Coast, S.A., produce:—Zadok, from Valparaiso, 50 tons bars; Rokeby Hall, from Valparaiso, 27 tons bars; Valparaiso, from Valparaiso, 450 tons bars; Barracouta, from Valparaiso, 35 tons bars; Casa Blanca, from Valparaiso, 50 tons bars; Nauphante, from Valparaiso, 28 tons bars; Bella, from Valparaiso, 24 tons bars; Lurlei, from Valparaiso, 75 tons bars. At Swansea. Huasco, from Mollendo, 635 tons ores; Glanrafon, from Carrizal, 745 tons regulus; Llewelyn, from Carrizal, 760 tons regulus. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

	Ores.		Regulus.		Bars.		Ingots.		Barilla.
Liverpool	—	.....	—	.....	8,209	.....	388	.....	9
Swansea	1149	.....	3763	.....	2,481	.....	—	.....	—
Total	1149	.....	3763	.....	10,690	.....	388	.....	9

Representing about 13,007 tons fine copper, against 12,489 tons June 30; 14,523 tons July 15, 1875; 19,200 tons July 15, 1874; 23,500 tons July 15, 1873. Stock of Chili copper in Havre, 5960 tons fine. Stock of Chili copper afloat and chartered for to date, 9986 tons fine. Stock of foreign copper in London, chiefly Australian, 5652 tons fine.

Messrs. SANFORD and BIRD—COPPER: Flat, with little business doing in either raw or manufactured.—TIN: Steady at quotations.—TIN PLATES in slightly better demand: prices steadier.—LEAD a little firmer.—ANTIMONY dull.

Messrs. FRY, JAMES and Co.—COPPER has been flat and drooping in value, both from the lifeless state of general trade, and from the condition of Chilian exchanges, which for the moment enable importers to take lower prices for that copper. Australian has participated in the decline, and is fully 40*s.* per ton lower.—TIN has fluctuated but slightly, and prices, on the whole, are about 20*s.* per ton down in the fortnight.—SPELTER continues very quiet.—LEAD steady at the reduced quotations.—TIN PLATES have been in moderate request at minimum rates.

THE IRON TRADE.

July 18.—The British Iron Trade shares the adversity which would appear to have fallen on all parts of the world, and continues to suffer from the lessened demand and the transformations which competition for export orders necessitates. One result of the ever-increasing importance of export demand, and the competition of districts and countries for the supply of mercantile requirements, is to deprive the maker of the sole power of fixing prices for the trade, and compel him to allow the buyer a voice in the matter. With a present price difference of from 10*s.* to 40*s.* per ton at shipping port in favour of excellent makes of iron other than the old well-known Staffordshire marks (list brands), it is evident that these latter are no longer of primary importance to exporters who have to compete in markets where foreign iron has a footing. The temporary closing of works, working half time, or any expedients tending to artificially sustain prices, will not bring back trade to old channels, but, on the contrary, ensure its permanent diversion.

The predominating influence of another industrial power—South Wales—seems also to be passing away. Exhausted and weakened by strikes, deprived by circumstances of the rail trade—its backbone—the old giant dreams, indeed, of a day when its blast and puddling furnaces will be re-lighted, but if the future trade of the country is to be "export" new capital is by no means likely to settle again in the hills and neglect the sea board. Meantime the accounts from the district of losses and unremunerative business are very depressing. Large coal contracts for delivery over one and two years have been taken at extremely low figures, mainly to keep the pits open and uphold leases. Tin plate works have joined the closing movement amongst mills and forges, and for many markets common bars are shipped per steamer from Liverpool or Antwerp, in substitution of and supplanting the Welsh iron cargo trade of yore.

A complete transformation of the trade is also being brought about by the rapidly increasing substitution of steel for iron. Sheets and plates of excellent soft quality can now be supplied, but the trade is principally in rails, and whilst the iron rail trade languishes for want of orders, the steelworks are active enough, and tolerably prosperous too. True, they often feel the effect of foreign competition, but do not greatly complain when it takes off orders under long guarantees, and payment by instalments over some years. Foreign orders of this character, and with payment in debentures, have indeed recently been declined, and referred to more accommodating industrial centres abroad.

The Pig-Iron trade, which suffers particularly in the North of England from the decreased consumption in the district mills and forges, has been mainly indebted for its steadiness to the large export demand. This having recently fallen off, prices show a tendency to recede both in Scotland and Cleveland. The same may be said of hematites.

A glance at the Board of Trade Returns for the first six months of this and two previous years will suffice to show the great falling off in exports, both as regards quantity and quality. But there is much to encourage in the merchant trade visible on an examination of the separate items and countries, for although particular descriptions of iron and ironware cannot be delivered to old continental markets that are contiguous or easy of access to industrial centres in France and Germany, yet since these countries extend over a wide area, they cannot avoid markets becoming open to us which cannot support long and expensive carriage from their own inland works. This explains in some measure why we still figure largely as exporters even to countries whose competition is yet increasingly felt.

Much indeed of the universal stagnation, commercial confusion and perplexity, and loss of capital in the trade, is due to the working tariffs. Countries are treated as a geographical whole, but in truth have not in all provinces the same wants and the same need of protection. In a revision of tariffs the individuality of provinces may possibly be more considered, and the present inconsistency of Government aid to intercommunication on one hand, and the hindering it by petty Custom's dues and obstacles on the other, be modified or removed.

As regards prospects there are many good orders afloat. For Spanish railway requirements several orders have been given out, both here and abroad. Russia, Denmark, Italy, and Canada are buyers, and tenders for 35,000 tons of steel rails for 1877 delivery are required for the Great Western Railway here. In iron pipes and other castings too there are various wants amounting to no insignificant quantity in the aggregate, 20,000 tons being for Bombay, whilst for Brazil the unparalleled order of 80,000 tons of large pipes has been placed in Scotland. It must also not be overlooked, that production is immensely curtailed by the closing or but partial operation of numerous works, both home and foreign. On the other hand, the buying power of the community in all parts of the world is admittedly diminished, and the depreciation of silver has greatly deranged all business transactions with India. Though improvement is met with in individual cases, we see no immediate prospect of a demand large enough to favourably affect the iron trade in general, and must content ourselves apparently, for some time longer, with so-called hand to mouth business.

WM. BIRD and Co.

Laurence Pountney Hill, July 18.

Although there has not been any great increase in the amount of business transacted in the MINING SHARE MARKET since our last, there has been a better demand for one or two mines; and, as usual, when buyers appear for shares quoted at low prices they cannot always be had. Those dealt in have been Tankerville, Glyn, Parys Mountain, Rookhope, Roman Gravels, East Van, Wheal Crebor, Pennerley, Penstruthal, and a few others.

At the Cornish ticketing on Thursday the copper standard declined 5*l.*: 3141 tons were sold for 13,114*l.*, or an average of 4*l.* 3*s.* 6*d.* per ton.

The quantity of copper ores sold at the ticketings in Cornwall for 12 months ending June 30 last was 57,173 tons, realising the sum of 277,630*l.* 18*s.* 6*d.* The average produce of this ore was 6¾ per cent.; standard, or price of copper in the ore, 113*l.* 8*s.* This shows a trifling increase in the previous year, but a falling off in the production of Cornwall of nearly one million sterling in one year since 1857, in which year the quantity raised and sold was 198,697 tons, producing 1,276,844*l.* This ore was sold at 6¼ per cent. produce, and sold at an average standard of 140*l.*

East Van has advanced from 5 to 8¾, 9; at the meeting held on Thursday (particulars of which will be found in another column), it was resolved to raise fresh capital to prove the mine in depth. Van, 36 to 38 ex div.; Van Consols, 1⅝ to 1¾; West Chiverton, 17 to 19; West Craven Moor, 10 to 11; St. Patrick, 1¼ to 1⅜; Great Laxey, 17 to 18 ex div.; North Laxey, ⅝ to 1. Great Dyliffe, 4¼ to 4½; the engine-shaft is now 6 fms. below the 120, and producing rich ore. The 120 east is driving in a lode worth 20*l.* to 25*l.* per fathom, in easy ground, and whole from the 70 to the 120. The 45 west is worth 20*l.* per fathom. The 40 east 10*l.* per fathom. Roman Gravels, 14 to 15; no change in the mine. Lisburne, 60 to 62; a dividend of 1*l.* per share has been declared. Tankerville, 10 to 10½; the winze sinking below the 167 has improved since the meeting. West Tankerville, 1½ to 1⅝; Rookhope, ⅝ to ¾; Ladywell, 1¼ to 1⅜. Glyn has been in demand at 3¼ to 3½; a level is driving to cut the Van lode 13 fms. under the present level.

Pateley Bridge, 3⅞ to 4¼; the expected deposit of lead ore in the Lumb vein has been cut into 15 ft., and for the whole of that distance the vein is filled with lead ore and gossan; the furthest point is the richest, and the south wall not yet reached. This may turn out an important discovery. Parys Mountain, ⅝ to ¾; another string of copper and sulphur has been met with in the 90 cross-cut south, also a small joint of soft flookan and black copper ore, and the nature of the ground is everything, the agent states, that can be desired for the production of copper. Penstruthal, ¾ to ⅞. Cargoll, 3 to 3½; at the meeting in Cornwall a call of 4*s.* per share was made. The prospects of the mine, the agent states, are very encouraging, especially in the 11 fm. level, where the top of a course of ore has been passed through 7 fms. in length, worth one ton per fathom; 18 tons of ore have been sold—15 tons at 29*l.* 2*s.* 6*d.* per ton. At the Brookwood meeting the accounts showed a profit on four months working of 115*l.* 12*s.* 7*d.*, and a credit balance of 131*l.* 1*s.* 11*d.* The copper ores sold realised 166*l.*, and the agent hopes to do better for the next four months.

Wheal Grenville, ⅝ to 1¼; the tin sale—11 tons 8 cwts.—realised 46*l.* per ton = 524*l.* 14*s.* Wheal Crebor, 2½ to 3; the copper ore sold on Thursday, in face of the fall of the standard, for 127*l.* 13*s.*, including carriage. Prince of Wales, 6*s.* to 8*s.*; the ore here realised 60*l.* 15*s.* Alvinggan and Burngullow, 2⅜ to 2⅝; Bedford United, 17*s.* 6*d.* to 20*s.* Clitters, 2½ to 2⅝; the sale here realised 162*l.* 13*s.* 6*d.* Marke Valley, 1½ to 1⅝; the copper ore sold on Thursday brought 123*l.* 12*s.* 6*d.* Devon Great Consols, 3 to 3⅛; the 705 tons of copper ores sold here for the month realised 2222*l.* South Caradon, 120 to 130; the mine sold 470 tons for 3078*l.* Two parcels of 50 tons each brought over 12*l.* per ton. Carn Brea, 36 to 38; Cook's Kitchen, 3 to 3⅛; Dolcoath, 34 to 36 East Caradon, 1 to 1¼; East Pool, 12 to 13; Herodsfoot, 3½ to 4; Old Treburrett, ¼ to ⅜; Pennerley, 1⅛ to 1⅜; South Carn Brea, ⅞ to 1⅛; South Condurrow, 4 to 4¼; South Roman Gravels, ⅞ to 1⅛; Tincroft, 18 to 19; Trebeigh Consols, 5*s.* to 6*s.*; West Basset, 5½ to 6½. West Frances, 6 to 7; we understand a call will be made at the meeting. West Seton, 45 to 50; West Tolgus, 55 to 57½; Wheal Agar, 2⅜ to 2⅝; Wheal Kitty (St. Agnes), 2½ to 3; Wheal Uny, 1½ to 1⅝.

Argentine, 5⅜ to 6¼; Condes of Chili, 5⅜ to 6¼. Santa Barbara, 1⅜ to 1½; the advices this month show a profit for May of 580*l.* 13*s.* 5*d.* The gold returned was 364*7* oits.; 154*9*. 19*s.* 6*d.* working cost, including 171*l.* 16*s.* 2*d.*; on capital account, 969*l.* 6*s.* 1*d.* Chontales, 7*s.* to 9*s.*; the loss here in the month is 116*l.*; gold returned, 290*l.*; costs, 406*l.* Javali, 6*s.* to 7*s.*; remittances, 1170*l.*; costs, 868*l.*, including 60*l.* on capital account. Cedar Creek, ⅛ to ¼; Eberhardt and Aurora, 8¼ to 8⅜; Emma, ⅜ to ½; Flagstaff, 1⅛ to 1⅜; Frontino and Bolivia, 2¼ to 2⅜; Last Chance, ⅛ to ⅜; New Quebradas, 3⅜ to 4; Panulcillo, 1⅞ to 2; Richmond, 9 to 9¼; San Pedro, 1¼ to 1⅜; South Aurora, 7*s.* to 9*s.*; Sweetland Creek, ¼ to ⅜; Gold Run, 15*s.* to 16*s.*

The Market for Mine Shares on the Stock Exchange has to a certain extent participated in the better feeling exhibited in other markets during the week.

St. John del Rey, 330 to 350; the produce for June was 37,000 oits., of the value of 14,377*l.* It appears that during the first fortnight of June their general operations were carried on without any interruption, excepting that caused to the regularity of the attendance of our free borers by the observance of some holidays. The attendance, on the whole, was rather higher than heretofore, and the general work of the establishment was steadily prosecuted during the period mentioned. As yet they had a very fair supply of water for working the general machinery both in the mine and at surface.

Cape Copper, 39 to 41; the meeting held on Wednesday is reported in another column. The last report from the mines states that the 80 south on the bunch of ore lately passed through in the eastern driving is looking remarkably well, producing fully 7 tons of good quality ore per cubic fathom. Rather over 10,337*l.* worth of this company's ore was sold at Swansea on Tuesday, at 14*s.* 1*d.* per unit, which is a very low price, but, as it appears that it only costs the company about 10*s.* 2*d.* per unit free at Swansea, it is obvious that there is still a good margin of profit.

Richmond, 9 to 9¼; the telegram states the week's run at $62,000. The refinery produced doré bars to the value of $29,000. The manager's report this week records steady progress at all the points under development, and the discovery of an important body of rich ore in the 600 ft. level, from which he anticipates improved smelting results, as already evidenced in the large return announced this week. We learn that by more recent advices the discovery in the 600 is even of more moment than was at first supposed. Had it come earlier it would have prevented the waste of resources that must have taken place by passing so much ferriginous ore through the furnaces without the necessary lead to flux it. However, good ore is never too late, and the mine must be greatly improved by the recent important addition to the reserves. The manager states that the winze below the 700 has been sunk 30 ft. in good ore. It is added that a further depth of 20 ft. has been reached, making 50 or 60 ft. to the present date. A local journal states that competent judges estimate that there is sufficient ore in sight to run the Richmond furnaces for three years.

Argentine, 5⅜ to 6¼; detailed advices are due at the beginning of next week, and will appear in next week's Journal. From the latest advices it would seem that stamping operations were being successfully carried on, fully proving the estimates of the value of the respective mines. Condes, 5⅜ to 6¼; the second shipment of 143 tons of ore has been sold at 16*l.* per ton, and considering the fall in lead and silver it is very satisfactory. Further detailed reports from Mr. Seccombe, the company's superintendent, are considered to fully confirm the high opinion formed of the different mines owned by the association. The rumour mentioned in last week's Journal that the Franklin property, adjoining the Exchequer Mine, was sold in San Francisco, was to the effect that the price paid was $10,000,000, or 2,000,000*l.* (not $10,000, as stated), and the extent of the property 2500 lineal feet.

Frontino and Bolivia, 2¼ to 2⅜; the May profit will be $7000, or nearly 1200*l.*, from which will have to be deducted the general expenses, in Medullin and London, amounting to about 150*l.*, leaving the net profit for the month at 1007*l.* Mr. White states that the mines are in a very satisfactory condition, the only drawback being the temporary delay in the completion of the Silencio pumpwork. The notable points in Mr. White's report are, that in the Cecilia Mine the richness of the lode (which is from 12 to 15 ft wide) is equally distributed and very uniform, the amount of water available for the stamps being the only question; while at the Palmihala Mine, Mr. White estimates that the company may expect that the net profit from it for the month of August, when the mine will be in the company's own hands, will amount to $2500 (416*l.*)

The market for hydraulic or gold-washing shares has been comparatively firm. The later information from the Pacific Coast speaks of the rapidly increasing volumes of water caused by the action of the intensely hot summer sun on the accumulated snow. This would, of course, have the effect of shortening the water season, as it causes the snow to melt too rapidly. However, for the time this description of mining is progressing energetically, and is being more sought after in San Francisco circles. Birdseye Creek, ⅜ to ½; the report issued in anticipation of the annual meeting for July 25 shows that in the twelve months ending April 29 a net profit of 1397*l.* 4*s.* 8*d.* had been obtained, a considerable portion of which had been expended in fitting up the Red Dog claim, which, however, is likely to pay well next season, the agent reporting that he is more than ever convinced of its vast richness and extent. Blue Tent, 3 to 3½; the reports from the mine state that everything is progressing favourably. Washing had been carried on at three claims, and all the water made available. Ditch carrying water all right. Cedar Creek, ⅜ to ⅝; a telegram received during the week states the gross returns for June to be $15,750, the mining expenses for same period being $10,750; while in the month the Yankee Tunnel has been advanced 130 ft. Sweetland Creek, ¼ to ⅜; Mr. M'Lean reports that he has fairly started on another run, but so far the developments show no improvement. Oregon Preference, 4 to 4½; there is not any information worthy of notice from these mines. The agent was utilising all the water he could obtain, and the hot weather was causing the snow to melt away almost too fast. The future prospects are considered by Californian experts who have lately visited the property to be amongst the best on the coast.

There has been a more extended business doing in British lead mines during the week. East Van and Pateley Bridge have improved, upon reports of discoveries, while transactions have been recorded in most of the leading descriptions, such as Van, Roman Gravels, Pennerley, Tankerville, &c. Van, 36 to 38; there is no change to report; the mine is looking well, especially in the bottom level. All surface operations are proceeding as usual. Grogwinion, 6 to 7; at the half-yearly meeting, held yesterday, the reports and accounts were unanimously adopted, and a dividend at the rate of

12½ per cent. per annum was declared. The manager gave a very satisfactory account of the mine's prospects, and stated that increased ore sales will result during the next six months. Great Dyliffe, 4½ to 4¾; the engine-shaft is now 6 fms. below the 120, and producing rich ore. The 120 east is driving in a lode worth 20*l.* to 25*l.* per fathom, in easy ground, and is in whole ground from the 70 to the 120. In the 45 west the lode is also worth 20*l.* per fathom. The 40 east is worth 10*l.*, and the rise 10*l.* per fathom.

Wye Valley, 6½ to 7½; the manager's report, published in another column, announces that this month's sale will be 60 tons, instead of the usual 40 tons; also that the lode in the 22 has much improved, and is showing branches of ore identical with what they had in the rich discovery at the level above, and in a few feet further driving the main bunch of lead will be intersected. West Wye Valley, 3¾ to 4¼; the large reservoir on the top of the hill is approaching completion, and when finished will store sufficient water for all purposes in the driest seasons. Brookes's shaft is making good progress in sinking, and the 22 is being driven towards it with full force in a fine course of ore ground. St. Harmon, 3¼ to 3⅞; excellent progress has been made of late at this mine. The levels are now all in thorough working order, and operations are going forward in good style. A nice bunch of ore has been discovered in the 23, and a further discovery has been made in the bottom level, whilst the stopes in the 35 are yielding a good quantity of ore, and likely to improve. Cwm Dwyfor, 1 to 1¼; the meeting on Thursday is reported in another column. Pennerley, 1½ to 1¾; the report is more encouraging this week, and will be found in another column. The lode in the 130 east is improving. At Potter's Pit the operations are steadily progressing, and producing ore at nearly every point of driving. Pateley Bridge, 3⅞ to 4¼; a very important discovery has been made in the Lumb vein. The agent reports that he has cross-cut through the vein 15 ft., and for the entire distance the lode is filled with lead ore and gossan, the end being the richest, and not yet through the vein. The agent estimates the lead ore passed through thus far to be equal to a solid rib of lead 3 ft. thick. This is exceedingly valuable. Other parts of the mine unchanged. West Pateley Bridge, 5 to 5¼; the lode in No. 2 shaft has further improved, and now worth 12*l.* per fathom. In No. 1 shaft the lode is worth 9*l.* per fathom. The driving of the level from joint adit is being pushed on with all possible speed.

Subjoined are the closing quotations:—

Assheton, ⅞ to 1⅛; Carn Brea, 36 to 38; Devon Great Consols, 2¼ to 3; Dolcoath, 34 to 35; East Caradon, 1 to 1⅛; East Lovell, 1 to 3; East Van, 8¼ to 9⅛; Glyn, 3¼ to 3½; Great Laxey, 17 to 18; Great West Van, ½ to ¾; Hingston Down, ½ to ¾; Marke Valley, 1⅝ to 1⅞; Pateley Bridge, 5¼ to 4¼; Parys Mountain, ⅝ to ⅞; Pennerley, 1½ to 1¾; Penstruthal, 15s. to 17s.; Roman Gravels, 14¼ to 14½; Tankerville, 9¼ to 10¼; Tincroft, 17½ to 18½; Van, 36 to 38; Van Consols, 1½ to 1¾; West Assheton, 1 to 1¼; West Basset, 4 to 5; West Chiverton, 17 to 18; West Tankerville, 1⅝ to 1⅞; Wheal Grenville, ¼ to 1¼; Almada and Tirito, ½ to ⅝; Argentine, 5¼ to 6¼; Birdseye Creek, ⅜ to ⅞; Cape Copper, 39 to 41; Cedar Creek, ⅛ to ⅝; Chontales, ¼ to ½; Colorado Terrible 1 to 1½; Condes of Chili, 5¾ to 6¼; Don Pedro, 1-16th to 3-16ths; Eberhardt and Aurora, 8½ to 8¾, ; Emma, ½ to ¾; Exchequer (Gold), 1⅝ to 1⅞; I.X.L., ⅞ to 1; Flagstaff, 1⅝ to 1⅞; Frontino and Bolivia, 2¼ to 2⅝; Javali, ¼ to ½; New Quebrada, 3¼ to 4; Pestarena, ¼ to ⅝; Richmond Consolidated, 9¼ to 9½; St. John del Rey, 340 to 350; San Pedro, 1¼ to 1¾; Sierra Buttes, 1¼ to 1¾; South Aurora, 5-16ths to 7-16ths; Sweetland Creek, ⅛ to ¾; United Mexican, 1¾ to 2; Blue Tent, 3 to 3¼; Oregon, pref., 4 to 4¼; West Pateley Bridge, 5 to 5¼; New Zealand Kapanga, ⅞ to 1.

COLLIERIES.—There has been but little doing in this class of shares during the past week, almost the only transactions recorded having been in Chapel House, Thorps Gawber, and West Mostyn preference shares. Chapel House close about 2½ to 2¾ nominally, but there have been few transactions, and this price has been made by "bears" anxious to close their accounts, and with a view to picking up a few shares cheaply. We find on enquiry that all those shareholders who have written to the secretary not only express themselves pleased with their property, about the value of which, however, there can be no doubt, but also completely approve the policy of the board in ceasing for a time to pay the usual dividend. The colliery is now making a profit per ton equal, if not superior, to that of any of the best in the kingdom, and there can be no doubt that it is wiser to use these profits for a short time in developing the property with a view to increasing the dividend and making a handsome return, than to adopt the course taken by many directors of struggling on to pay a meagre percentage on capital at the cost of future prosperity. If the shareholders will support the judicious course and recommendations of the board we believe that, for its size, there are few collieries which in the future will equal the Chapel House. Thorps Gawber shares have been done at 3¼ to 3¾. West Mostyn preference 8*l.* paid have changed hands at 3 to 3¼, this low price being accepted by sellers in consequence of the belief that when the guaranteed dividends cease some time will elapse before the colliery can pay. The works are progressing satisfactorily, the 6-feet coal having been cut at a depth of 285 feet, and found so far of good quality. Altami shares close at 5 to 5¼. It is expected that the cannel and hollin seen at the old firm pits will be reached next week, and great expectations are raised as to the value and thickness of both. The demand for coal in this neighbourhood is somewhat limited, but as soon as trade revives this colliery will be in a position to supply a large quantity of coal of good quality. The "main" coal continues 10 feet thick. Lay Halls close at 8 to 10. Operations are proceeding most satisfactorily. Cakemore Colliery shares are flat at 2½ to 2¾. Going further south we come to Cardiff and Swansea Colliery, the accounts of which have been issued prior to the meeting to be held on the 28th inst. The report shows that there have been raised at the Church and Pentre Collieries over 140,000 tons of coal, which has sold at a gross profit of 1s. 4d. per ton, while the operations at the Resolven have resulted in a raising of about 60,000 tons at a loss of over 1s. per ton. The loss at this colliery (Resolven) is, however, due to some extent to the low demand for this class of fuel, as were prices no better than the average throughout the year there would, to say the least, have been no loss had the demand been up to the capability of the colliery, while the Pentre and Church would have enabled the company to place a small balance on the year's working to its credit. As a matter of fact the gross profits have amounted to 6013*l.*, which deducted from the charges under profit and loss (debenture interest, suspense account, directors travelling and office expenses) leaves a debit balance against the property of 2580*l.* That this debit balance is not larger is due in a great measure to the valuable contracts at high prices now in hand, as had the same rates as at present ruled throughout the year the company would not have done so well as it has. Taking everything into consideration, the prospect of a better demand and higher prices at no great time hence, the shareholders should exercise some little patience, as the capabilities of the colliery, and quality of its produce, place the company in a position to compete favourably with all others in the districts in which its properties are situated. Bilson and Crump close at 7 to 8.

Great trouble is still prevalent in South Yorkshire, the men yet holding out in some collieries against the just and reasonable requirements of the masters, who offer to pay their men the same rate of wages paid by others. When at work the men can earn 8s. to 15s. per day, yet call these "starvation wages," and insist on better payment. As mentioned in our last, we should not feel inclined to feel so grieved if these excessive wages did any good, but the collier, by working two or three days per week, can get a good living, and the remaining days he can occupy in drinking and fomenting discord among his fellows. Were the price of labour in Yorkshire at a reasonable rate, the men receiving, as compared with others, a fair wage, the cost of raising coal could be greatly reduced, and this district would then be in a position to compete favourably in the coal markets with all others.

HALIFAX.—July 20: The following quotations are from Mr. J. H. Thackrah's list:—Halifax and Huddersfield Union Bank, 29⅞; Halifax Joint-Stock Bank, 29⅜; Halifax Commercial Bank, 25¼; London and Yorkshire Bank, 27s. 3d.; John Crossley's, 12½; Whitworth and Co., 8; Elland Gas, 20; Rastrick Gas, 18½; Bradford Brick and Tile, A, 21¾; ditto, B, 7; Charlestown Brick and Tile, 10; Ripponden Commercial, 11½; Hebden Bridge Cotton, 10; Yorkshire Boiler Insurance Company, 22s. 6d.; Norton Brothers, 7¾.

At Swansea Ticketing, on Tuesday, 2035 tons of copper ore were sold, realising 23,241*l.* 6s. 6d. The particulars of the sale were—Average standard for 9 per cent. produce, 91*l.* 3s. 8d.; average produce, 16½; average price per ton, 11*l.* 8s. 5d.; quantity of fine copper, 335 tons 15½ cwts. The following are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
June 27	1031	£ 94 19 2	20⅝	£15 4 1	14s. 8d.	£73 6 8
July 18	2035	91 3 8	16½	11 8 5	13 10	69 3 4

Compared with the last sale, the decline has been in the standard 3*l.* 15s. 6d., and in the price per ton of ore about 12s. 6d. On Aug. 1 there will be offered for sale 1892 tons, from the Cape, Union, Berehaven, Betts Cove, Concordia, and other mines. Messrs. Richardson report that the Cape ores were of 27 13-16 produce, and realised 19*l.* 11s. 7d. per ton of ore, or 14s. 1d. per unit of fine copper; the standard was practically the same, being only about 6d. below that for the whole sale.

At the Truro Ticketing, on Thursday, 3141 tons of copper ore were sold, realising 13,144*l.* 8s. 0d. The particulars of the sale were—Average standard, 100*l.*; average produce, 6⅞; average price per ton, 4*l.* 3s. 6d.; quantity of fine copper, 217 tons 16 cwts. The following are the particulars:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
June 1	1031	£109 8 0	6½	£4 8 0	13s. 5½d.	£67 7 4
„ 22	3100	108 18 0	6¾	4 5 0	13 2¾	66 1 0
July 20	3141	100 0 0	6⅞	4 3 6	12 1	60 7 0

Compared with the last sale, the decline has been in the standard 5*l.*, and in the price per ton of ore about 7s.

The Phosphor Bronze Company have declared an interim dividend of 2½ per cent. for the six months ending June 30.

Petitions to wind-up the Railway and General Light Improvement Company, and the National Funds Assurance Company, have been presented to the High Court of Justice.

A petition to wind-up the Governor and Company of Copper Miners in England has been presented to the High Court of Justice.

LEAD MINES IN WALES.—We understand that the lead mines are generally looking well, but that the water is very scarce for dressing operations. The rivers and pools have not been so low for many years. When the wet weather sets in the lost time will soon be made up in the returns of lead ore.

SOUTH WARD MINE.—We call the attention of our readers to this promising young lead mine, now in the market. The sum of 15,000*l.* has been spent in developing the property (90 fms. in depth), but in consequence of a determination of some of the adventurers to spend no more money it is in contemplation to liquidate the affairs of the company. We are informed that some of the largest shareholders are willing to continue the prosecution of the mine, and that any enterprising speculator with a small capital at command might meet with a successful and profitable concern. Several of the mines in the neighbourhood have divided large profits with the adventurers, amongst them may be mentioned Tamar Consols, which gave over a million, and South Tamar, which declared dividends to the extent of 36,000*l.*

STEEL WIRE CABLES.—A trial was lately held at the Devonport Dockyard, in the presence of Admirable G. O. Willes, Superintendent of the dockyard; Capt. Oldfield, Steam Reserve, and other officers, of Messrs. Bullivant and Co.'s patent steel ship's cables and towing hawsers. The steel hawser used was 8 in. in circumference against a hemp one 25 in. in circumference. The experiment was conducted under the direction of the Admiralty, for the purpose of testing which could be more easily handled. The report as to handiness in working was entirely in favour of the steel wire hawser. Another great consideration is that 120 fms. of 24 in. hemp cable weighs 7 tons 16 cwts., while the same number of fathoms of 8 in. wire cable, which is equal to, if it does not exceed, the strength of the other, weighs only 2¼ tons. The wire rope which was tested is equal in strength to a 2¼ in. chain, the weight of which would be 16 tons. Now the size of our ships has so greatly increased that the introduction of the light and flexible steel wire-ropes must be of the greatest importance. It is found impossible for men to handle larger chain cables and hawsers than are used for 6000 ton vessels, but now we have a class of vessels nearly double this size. The introduction of steel wire cables will, it is considered, be absolutely necessary.

LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
June 28	Cwm Dwyfor	10	£13 7 0	Nevill, Druce, and Co.
July 17	Llanrhaiadr	10	£13 2 6	Burry Port Company.
18	Foxdale	64	15 0 0	Walker, Parker, and Co.

BLENDE.

Date.	Mines	Tons.	Price per ton.	Purchasers.
July 19	Cwmbyr	15	£ 4 8 6	Swansea Vale Co.

COPPER ORES.

Sampled July 5, and sold at Swansea, July 18.

Mines.	Tons.	Produce.	Price.	Mines.	Tons.	Produce.	Price.
Cape Ore	61	27¼	£19 5 0	Copper Ore	15	27½	£19 4 0
ditto	61	27½	19 5 0	ditto	3	4¾	2 10 0
ditto	61	27½	19 4 6	Knockmahon	132	7¾	4 19 6
ditto	61	27½	19 2 8	Berehaven	122	8	5 5 0
ditto	64	27	18 18 6	Swedish Ore	32	12¼	8 4 6
ditto	65	27	18 16 0	ditto	72	2¾	1 1 6
ditto	65	27	18 17 0	Cronebane	102	3¾	1 18 0
ditto	70	30¼	21 2 6	Moonta Ore	98	28	19 16 6
ditto	20	36¾	25 12 0	Copper Ore	53	2½	1 11 0
Betts Cove	73	10⅞	7 1 0	ditto	14	2	1 4 0
ditto	72	10⅞	7 1 0	ditto	13	5¾	3 3 0
ditto	100	17½	12 3 6	Vannoni	33	11¼	7 13 0
ditto	90	17	11 15 6	Ivrea	26	10¾	7 5 0
ditto	90	17	11 13 6	Del Soto	56	21½	14 15 6
Var	75	12½	8 11 0	Cuba Precip.	10	9⅞	5 18 0
ditto	74	12¾	8 12 0	ditto	8	10	5 18 0
Copper Ore	90	16⅜	11 3 6	Copper Reg.	19	37½	24 13 0
ditto	26	9½	6 4 6				

TOTAL PRODUCE.

Cape Ore	528	£10,337	1 0	Moonta Ore	98	£ 1,942	17 0
Betts Cove Cop.	425	4,350	5 0	Copper Ore	80	139	18 0
Var Ore	149	1,277	13 0	Vannoni Ore	33	252	9 0
Copper Ore	143	1,519	2 6	Ivrea Ore	26	188	10 0
Knockmahon	132	656	14 0	Del Soto	56	827	8 0
Berehaven	122	640	10 0	Cuba Precipitate	18	106	4 0
Swedish Ore	104	340	12 9	Copper Regulus	19	468	7 0
Cronebane Ore	102	193	16 0				

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Copper Miners' Company	230½	£ 1,297 11 6
P. Grenfell and Sons	93½	1,785 7 0
Nevill, Druce, and Co.	279	3,677 16 0
Vivian and Sons	247	2,207 14 0
Williams, Foster, and Co.	482	5,611 9 0
British and Foreign Copper Company	61	1,166 12 6
Mason and Elkington	189	2,434 16 6
Sweetland and Co.	84	1,690 7 0
Landore Smelting Company	369	3,389 17 0
Total	2035	£23,241 6 6

TOTALS AND AVERAGES.

	21 cwts.	Produce.	Price.	Per unit.	Standard.
Whole sale	2035	16½	£11 8 5	13s. 10d.	£91 3 8

Copper ores for sale on Aug. 1.—Cape Ore 714—Union Ore 606—Copper Ore 285—Berehaven 176—Betts Cove Ore 96—Concordia Ore 15.

COPPER ORES.

Sampled July 5, and sold at the Royal Hotel, Truro, July 20.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Devon Great Consols	102	£2 17 0	Wheal Crebor	78	£3 19 6
ditto	100	2 16 6	ditto	65	3 18 6
ditto	98	2 13 0	Gunnislake (Clitters)	79	6 5 6
ditto	76	2 15 6	ditto	73	5 9 6
ditto	74	2 17 6	ditto	72	4 5 0
ditto	73	2 13 6	ditto	71	6 0 6
ditto	61	2 5 6	Hingston Down	94	2 6 6
ditto	42	7 3 6	ditto	79	1 17 6
ditto	41	6 12 0	ditto	77	3 0 6
ditto	40	1 12 6	Glasgow Caradon	88	4 18 6
South Caradon	87	4 6 6	ditto	82	4 8 6
ditto	84	5 12 6	ditto	75	4 15 6
ditto	83	3 12 0	Brookwood	64	2 14 0
ditto	67	6 10 6	ditto	63	2 12 6
ditto	52	12 8 6	ditto	53	7 0 0
ditto	50	12 10 6	East Caradon	73	4 1 6
ditto	47	4 14 0	ditto	37	4 0 0
Marke Valley	76	3 0 6	Wheal Russell	68	1 19 6
ditto	72	3 6 6	ditto	26	3 3 6
ditto	60	6 17 0	Bedford United	37	2 0 6
ditto	55	2 17 6	ditto	21	4 2 0
ditto	44	1 9 6	Wheal Friendship	27	4 12 0
ditto	27	4 18 0	ditto	15	8 15 0
Wheal Crebor	84	4 2 6	Prince of Wales	30	2 0 6
ditto	81	3 19 6	Belstone	20	8 5 0

TOTAL PRODUCE.

Devon Great Con.	705	£2222	5 0	Brookwood	180	£ 709	3 6
South Caradon	470	3078	0 0	East Caradon	110	445	9 6
Marke Valley	334	1235	12 6	Wheal Russell	94	216	17 0
Wheal Crebor	308	1233	13 0	Bedford United	58	161	0 6
Gunnislake (Clit.)	295	1629	3 6	Wheal Friendship	42	255	9 0
Hingston Down	250	599	12 0	Prince of Wales	30	60	15 0
Glasgow Caradon	245	1132	7 6	Belstone	20	165	0 0

Average standard ..... £100 0 0 | Average produce 6⅞
Average price per ton £4 3 6
Quantity of ore ..... 3141 | Quantity of fine copper 217 tons 16 cwts.
Amount of money £13,144 8 0

LAST SALE.—Average standard ..... £106 13 0 | Average produce 6¾
Standard of corresponding sale last month, £108 18 0—Produce, 6¾

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Vivian and Sons	630½	£2785 12 9
Grenfell and Son	394½	2061 0 7
Nevill, Druce, and Co.	572	2106 11 3
Williams, Foster, and Co.	534½	2484 2 4
Mason and Elkington	493½	1839 13 4
Charles Lambert	152	637 17 3
Sweetland, Tuttle, and Co.	362	1229 10 6
Total	3141	£13,144 8 0

NO SALE on Thursday next, July 27.

Copper ores for sale at Tabb's Hotel, Redruth, on Thursday week—Mines and parcels.—West Tolgus 348—Crenver and Abraham 333—West Seton 244—South Crofty 168—Wheal Basset 142—New Pembroke 119—Botallack 92—Carn Brea 51—West Poldice 39—South Roskear 36—Penstruthal 35—East Basset 27—Dolcoath 20—Cathedral 20—Wheal Agar 15—Wheal Unity Wood 12—Wheal Seton 7—Wheal Penville 5—New Wheal Damsel 2.—Total, 1715 tons

*** With this week's Journal a SUPPLEMENTAL SHEET is given which contains—Original Correspondence: Iron: the Thunderer Explosion (F. S. Thomas); Rock-Boring Machinery (T. A. Warrington); Maxwell Land Grant and Railway Company (F. M. F. Cazin); the Comstock and Emma Veins (H. Sewell); Blakeley Hall Colliery—Plant v. Bristowe; New Consols; Anomalies of Market Prices and Securities (R. Tredinnick). Foreign Mining and Metallurgy—Silver Mining in America. Meetings of I.X.L., Cape Copper, West Goginan, Cwm Dyfor, East Van, Brookwood, Birdseye Creek, Cargoll, Grogwinion, and Bedford United Companies.

Notices to Correspondents.

*** Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be *filed* on receipt; it then forms an accumulating useful work of reference.

GUNPOWDER.—In our report of the North Staffordshire Institute of Mining Engineers, last week, there was an error in Mr Greenwell's remarks. He said he thought that the powder which possessed the greatest bursting power, and not the quickest propelling power, was *most* suitable for mining purposes.

SHARE DEALING.—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

Received,—"Shareholder" (Glasgow)—"M. N."—"Reader" (Leeds): It shall be seen to—"T. W. A."—"Corrector"—"Miner"—"Shareholder" (Camborne): The particulars you require are given in Mr. Ashmead's British Mining Share List, in the Supplement to last week's Journal—"An Adventurer" (Leeds).

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, JULY 22, 1876.

TRADE PROSPECTS.

The Earl of DERBY'S assurances to anxious deputations as to the course which the war between Turkey and Servia is likely to take, so far as it affects the great European powers, made by his lordship, in his official capacity as Foreign Secretary, has had a steadying effect upon the tone of the leading business Exchanges throughout this country. Such peaceful assurances have come at altogether the right time. Trade upon every hand required that it should be said we are not as a nation likely to be embroiled in a great continental war, the end of which it would be altogether impossible to forsee. The iron trade, for instance, might perhaps in some of its departments benefit for awhile by such a calamity, but in respect of the country's trades as a whole great damage would result, and amongst all the end of the strife would be signalised by inevitable and serious prostration. Even by the short sighted, therefore, war was denounced. Colliery owners and ironmasters, cotton spinners and lace makers, importers and exporters of almost every class of goods throughout the complicated machinery of British commerce and manufactures, are all longing for a steadiness of expectation and view of a much brighter aspect than any which would follow upon an embroilment in the disputes between the SULTAN and his Servian subjects.

This steadiness of expectation will be largely promoted by what the Foreign Secretary has said to Mr. BRIGHT and his friends, who formed the deputation, to whom, on Friday last week, the Earl of DERBY replied. The importance of the views expressed on behalf of the Government is increased by reason of the splendid harvest prospects, over which the nation is now rejoicing. Perhaps there was hardly ever a more abundant hay harvest than that which will soon have been wholly ingathered throughout the length and breadth of our land. If all goes well the corn harvest will be hardly less gratifying. It needs not that we should here enlarge upon the immense benefit to the trade of England which results from plentiful harvests. The three recent unfavourable ones have done much to contribute to the dulness of business which has prevailed throughout more than half the period which those harvests represent. It would seem as if another such corn harvest as that of last year would, coming at such a time as the present, result in scarcely other than disaster in numerous circles. The abundance and cheapness of money would have but little effect in checking such an issue. But with peace established upon a firm footing, with a plentiful harvest, and with cheap and abundant money, there ought to be a widely prevalent assurance that we have nearly turned the corner of the proverbial long lane through which we have been so wearily plodding.

If we are not mistaken we already descry signs of nearnesss to that much to be desired point. The very low prices to which the chief useful metals have descended are beginning to bring about that effect which was looked for from such a cause. Alike at home and abroad, we hear of large undertakings having been determined upon which will certainly consume very great quantities of iron, both wrought and cast. We should have no difficulty in particularising some such home undertakings if at this juncture the publication were allowable. Presently our readers will, by the information which will reach them through the usual channels, see that what we say is quite correct; but we must not forestall. We are, however, in a position to call attention thus prominently to that with which many of our readers are already familiar. South America is not universally prosperous, because it is not everywhere so peaceful as it might be. Where belligerent sentiments prevail and operate, there we have depression and impecuniosity. That portion of South America which is under the rule of the Emperor of BRAZIL cannot be classed within this category, although even the Emperor of BRAZIL might benefit by a little more attention to those qualities—prudence and forethought—which have done so much to bring about the prosperity of the European nations. Whilst, however, the counties about the River Plate would find it hard work to negociate a good loan, to be expended even in local improvements of a substantial order, Brazil is able to enter the market and get money for such uses, perhaps, at no very great trouble. Hence, it comes about that Glasgow ironfounders are engaged casting upwards of 80,000 tons of pipes, and therein are executing an order variously estimated as representing from 1,500,000*l.* to 2,000,000*l.* sterling. The Brazilians have, to our knowledge, been a long time contemplating this undertaking. It is a serious one, and embraces the bringing of water to Rio over a very long distance. The best time for placing the order by reason of the price at which it can be placed having now come, and the terms upon which the money to pay for the work can be obtained having equally touched the most advantageous point, the order has been accordingly placed. Side by side with this foreign work we have to place that for home use, represented in the 35,000 tons of steel rails for which tenders have been sent in to the directors of the Great Western Railway Company this week.

The Great Western Railway Company were as thoroughly convinced that economy would consist in replacing to that extent iron with steel rails two years ago as they are now, but steel rails two years ago were not to be had at the low figure at which they can now be purchased. It would be unfair to Sir DANIEL GOOCH to assume that he could not see coming on that ease in quotations which we have all had to note, and it would be equally unfair to assume that the able Chairman of the Great Western Railway Company has not satisfied himself that it would not be prudent for his board of directors any longer to remain out of the market. Sir DANIEL GOOCH has, we think, determined wisely. It may possibly come about that within the ensuing few months slightly lower quotations may rule for steel rails than are now in vogue; it is equally possible—nay, perhaps likely—that higher quotations may rule. At present, however, whether we are to look for higher or lower quotations, orders for steel rails are sadly needed by the makers. For 35,000 tons of steel rails, to be delivered before the end of 1877, producers will accept rates which, in our view, make it highly prudent on the part of the Great Western Railway Company to place their specification at this juncture. The effect of the two orders we have quoted, and which are known to all observers of what is going on in the iron and steel market, combined with what leading engineers and manufacturers are aware is on the *tapis*, is increasing the conviction of men who are amongst the most influential and far seeing of those whose business conduct is thought to be most worthy of imitation that the time has arrived to begin buying iron and steel without the fear that the quotations hereafter soon to prevail will accuse them of premature haste. It is easy to understand that with the anticipation of undisturbed peace, and the abundant promise of a splendid corn harvest, together with a plentiful supply of cheap money, it were strange if men of mercantile and business note should avoid talking of the not remote return of a prosperous business time throughout the industrial world. Financial news wanting in cheeriness is being communicated relative to a firm or two in the iron trade who are just beginning to show how great has been the strain upon them of the late dull trade; but the trouble will be limited application, and in no way affects the prospects here sketched.

RAILWAY PROSPECTS.

The present prospects of the railways of the United Kingdom and its colonies must be a matter of some concern to the iron trade. After all, it is the railway interest which is the mainstay of the iron trade, and when the railway interest languishes the iron trade must languish also. The leading home railway companies cannot be said to have had a very brilliant time of it during the first six months of 1876. They have profited to some little extent from cheaper coal, but they have had to deal with very stagnant times, and their revenue has lost by consequence its elasticity, so that it has either remained stationary or has actually fallen off. As capital accounts have a tendency to constantly expand, a larger amount of profit will be required to maintain ordinary stock dividends for the past half-year at even their former level, and this larger amount of profit will not, it is to be feared, be forthcoming in scarcely any instance. This is, *prima facie*, discouraging, and is little calculated to induce a vigorous policy of extensions and renewals. On the other hand, the price of rails having now fallen to a more reasonable level, directors may be induced to purchase them more freely. Upon the whole, it seems probable that this will be the case, since although home railway profits may be a little smaller than before, home railway credit was probably never stronger than it is at present. The small investors of the country have discovered that there is no medium through which they can obtain a readier utilisation of their savings than the debenture, preference, and ordinary stocks of the great railways of England and Scotland; and this conclusion having been arrived at, the supply of new capital at the disposal of railway boards is practically unlimited.

With regard to colonial railways, they have of course, *per se*, a much weaker and more uncertain credit. Colonial railway construction is a "leap in the dark" to a far larger extent than the establishment of a new line in the Mother Country, which is in almost every quarter far richer and more populous. Investors in Canadian railways have learnt the truth of the principle which we have just enunciated, and learnt it, too, in the most severe and rigorous fashion. A Canadian railway is too generally an *ignis fatuus*, which only leads investors on from loss to loss, and Canadian railway credit is just now, accordingly, very weak. But the case is otherwise with the guaranteed railways of British India and Australasia. In our great eastern and Antipodean dependencies the State steps in, and either induces capitalists to undertake the construction of railways through the attraction of a guarantee of interest, or it issues its own straight bonds, and makes for itself the railways of which it contemplates the establishment. The consequence is that investors in Indian and Australasian railways do not lose their capital, either in whole or in part, as they too often lose it when they engage in Canadian ventures, and the effect of this will be that Indian and Australasian railway enterprises will be prosecuted more steadily and systematically than Canadian. Victoria has recently decided to raise nearly 1,400,000*l.* more to provide for the execution of sundry railway extensions, and this week New Zealand has also contrived—although not without some little apparent difficulty—to place a 5 per cent loan for 1,250,000*l.*, which will be principally devoted to the construction of New Zealand railways. The fall in the price of rails must encourage the prosecution of more Antipo lean railways. If this does not prove to be the case, we shall have fallen upon very strange times indeed, and all past experience will be belied.

FOREST OF DEAN COAL AND IRON TRADES.—When the depressed condition of business renders the reduction of workmen's wages imperative the disposition is too frequently displayed to circulate groundless rumours concerning disputes and difficulties in the monetary transactions of local firms employing labour, and we much regret that something of this kind has led our Forest of Dean Correspondent in last week's Journal to send us an erroneous statement, which must, doubtless, have caused great annoyance both to the GREAT WESTERN IRON COMPANY and to the BILSON AND CRUMP MEADOW COLLIERIES COMPANY; we, therefore, take the earliest opportunity of correcting any false impression that may have been caused. It was stated that the latter company was enforcing a claim against the former, which was, moreover, pressed in another direction for a still larger amount, although in the same paragraph our Correspondent demonstrates the improbability of the rumour by expressing surprise that the hostility of creditors should be necessary, "As the Great Western Iron Company is reputably a strong one, and the enterprising spirit evinced by it in the purchase and improvement of the property and its subsequent business pluck have won for it much praise." As a matter of fact, the entire statement was a fabrication, as will be evident from the subjoined letter which Mr. John L. Whatley, the trade manager of the Bilson and Crump Collieries Company, has been kind enough to send us:—

SIR,—In your last week's paper there appeared a statement from your Forest of Dean Correspondent of some rather serious complications between ourselves and an enterprising firm of ironmakers in this district. Be good enough to contradict this in your next, as there is not the slightest foundation for such a report.—Yours obediently (for Bilson and Crump Meadow Company),

Bullo Pol, Newnham, July 18. JOHN L. WHATLEY, Trade Manager.

It is scarcely necessary to say that the executive of the Great Western Iron Company are much annoyed that such a statement should have obtained currency, but we trust this correction and the consideration of the wages dispute pending at the time will convince them that annoyance was not intended.

MINING BOARD EXAMINATIONS.—The annual examination of the South-West Mining Board was held at Bristol from Monday, the 10th, to Friday, the 14th inst. Mr. Harrison (Vobster, near Bath), Mr. Needham (Newport), and Mr. J. T. Thomas (Coleford) conducted the examination at the grand jury room of the Bristol Assize Courts. When the examiners had concluded their labours the following names were posted as those which would be returned to the Secretary of State as duly qualified to receive certificates of competency:—John Nixon, Pontypool; Clement Probert, Blaina Works, Newport; Edwin S. Jones, Pontypool. At mid-day on Friday, the 14th inst., a meeting of the board was held, when the examiners presented their report, and several other matters of business were considered. Before the members of the board separated the following resolution, submitted by the secretary, Mr. Thomas, was adopted, a copy of it being forwarded to Mr. Lionel Brough, Inspector of Mines for the district:—

"That this board, and the three examiners associated with it, hereby desire to convey to their esteemed and valued friend, Mr. Lionel Brough, Her Majesty's Inspector of Mines for the district, a sincere and heartfelt expression of their sympathy with him in his present affliction. That his absence from the recent examinations, in consequence of his severe indisposition, was deeply regretted by the examiners and the board, who greatly missed the valuable aid and counsel hitherto so kindly given on these occasions, and that it is fervently hoped that Mr. Brough may soon be restored to his usual health and vigour, and that his life may be spared for many years of future honour and usefulness in a public service for which his long experience and well known abilities so eminently qualify him."

The examination for the mining district embracing the larger portion of the county of Durham, the county of Westmoreland, and a large part of Yorkshire, took place on Monday at the Central Hall, Darlington. A large number of candidates, chiefly from the Durham and Yorkshire collieries, presented themselves for examination, which lasted eight hours. The examination was conducted by Mr. A. L. Steavenson, of Durham, and Mr. John Forman, president of the Miners' Association. There were also present Mr. Thomas Bell, Her Majesty's Inspector of Mines; Mr. Bartlett, the secretary of the board; and Mr. J. B. Atkinson, Assistant Inspector of Mines, Fence Houses. The last-named gentleman had been called upon to officiate for Mr. Daglish, who had been called away suddenly to proceed to Belgium. There were 26 candidates, and their examination lasted the entire day. The purpose of the examination is to enable the successful candidates to obtain a certificate of authority issued by the Secretary of State, without which the office of manager of mines cannot now be held under the provisions of the recent Coal Mines Regulation Act.

PROPOSED MUSEUM OF SCIENCE.—The President of the Royal Society (Dr. Hooker), Mr. Spottiswoode, Dr. Burdon Sanderson, and Dr. Siemens, had an interview on Monday with the Lord President of the Council, the Duke of Richmond and Gordon, and presented to him a memorial in favour of the establishment of a museum of pure and applied science. The memorial was numerously signed by gentlemen who have been connected with the Loan Collection of Scientific Apparatus at South Kensington. The memorialists defined the proposed museum as as one "to contain scientific apparatus, appliances, and chemical products, illustrating both the history and the latest developments of science; where the methods and results of investigations which have marked important stages in the advancement of science may be studied, and where also the most highly perfected instruments of the day may be found." His Grace discussed the subject with the deputation, and stated that he would consult his colleagues.

AUSTRALIAN GOLD.—The Custom House account of gold received from Australia in the first-half of the present year states its value at only 1,918,985*l.* This is 28 per cent. less than in the corresponding half of last year. The Australians, however, have much hope of the productiveness of deep quartz reefs. The Oriental Company at Stawell struck a lode in May at a depth of 1060 ft., and on a trial crushing 7½ tons of stone yielded upwards of 48 ozs. of gold. In the same month 20 tons of quartz taken from the Port Phillip Mine, Clunes, between the 900 ft. and 1000 ft. levels, yielded 22 ozs.

TRADE IN WALES.—With an unparalled depression, both in intensity and duration, in the staple trades of the South Wales district, it is scarcely a matter of surprise that almost every week brings us intelligence of the suspension of old-established and reputable houses. Trade generally, not only in Wales, but the whole country, is just now passing through one of those crucial tests which visit us periodically, and test the stability of firms which in ordinary times justly command confidence. The depression which now obtains in every department of our staple industries is felt the more acutely in consequence of the prosperity which was enjoyed some two or three years ago, and when Trade Union agitators pushed to the extremest limit their demands for increased wages. The collapse of some of the oldest and most respectable firms in Wales demonstrates the supreme folly of the policy which those agitators so ruthlessly pursued, for unquestionably it produced such an enormous increase in the cost of production that manufacturers were unable to compete with our continental neighbours and our American rivals, and much of the trade which usually fell to the good fortune of the Welsh houses has silently drifted into other markets, and the condition of the great majority of the large manufacturing centres of South Wales to-day is most deplorable. That some of the largest firms have been obliged to succumb to the exigencies of the times can scarcely be wondered at, and that others will follow is only to be expected, considering the keen competition now existing, and the fearfully low prices now obtaining for iron and manufactured goods, and also coal. The great bulk of the unthinking public make no allowance for the exigencies of trade with which makers have to contend, and suspension of operations is generally associated either with reckless trading or culpable extravagance. Well-regulated minds, however, do not join in such wholesale condemnation, but, on the other hand, see much to sympathise with, and attribute failure to a combination of adverse circumstances over which they have no control. And assuredly, if there was ever an occasion in which large manufacturers and colliery proprietors deserved such sympathy, and when harsh judgment should be deprecated, it is the present, for never before in the commercial history of South Wales have merchants and colliery proprietors had more difficult and trying times with which to contend.

BRISTOL COAL FIELD.—Trade on both sides of the Bristol coal field is extremely dull. The pits are everywhere working short time, some only being employed two or three days in the week, and yet, with this limited output, stocks are rapidly accumulating. The men who recently struck work at the Kingswood and Parkfield pits against the reduction of wages have now all returned to their work, and the masters have at present more men at the pits than they can find work for. Prices are at their lowest point, and it is difficult to see how, unless some change for the better soon takes place, many of the pits can be kept at work at a profit. The retail price of coal at the local pits varies from 12s. to 15s. per ton. The demand for gas and steam coal is also very languid, but owners look with some hope to a little more activity in these branches as the time approaches when contracts for the winter will be made. There is a little business in the small coal trade, but this is principally owing to the fact that screening in port has been discontinued at Cardiff, and the district is thrown upon Bristol for its supply. The iron trade is in an almost hopeless state of depression. The mills are at work, but it is difficult to accept orders at remunerative rates, and there are some heavy stocks on hand. The iron mines at Winford are rather actively employed just now. A considerable quantity of ironstone is being raised there, which is carted to Bristol, and forwarded thence by Midland Railway to Staffordshire, where there is a good demand for it. It is said to be extremely suitable to the Siemens direct process, and should that process prove a success, as is confidently expected, there will be a still greater demand for ore.

THE BOILER EXPLOSION ON BOARD THE THUNDERER.—As a simple act of justice towards the authorities connected with the construction and fitting out of the Thunderer, we ask our readers to suspend their judgment in reference to the disastrous boiler explosion which took place on board that vessel on Friday last until a searching official investigation has taken place and thrown such light thereon as can be obtained. Whilst asking this as a matter of justice, however, we cannot help expressing our surprise and astonishment that whilst general engineering science recommends that ordinary steam-boilers should be made to bear a pressure of from 70 lbs. to 100 lbs. the square inch, that in a vessel which cost the nation no less than 300,000*l.* one of the boilers should have exploded when being worked at a pressure of only 34 lbs. the inch. We have hitherto been naturally and justifiably proud of the make, the durability, and general utility of our marine engines and boilers, but this sad occurrence is a crushing blow and a sorry commentary thereon, and has already produced an effect on the alleged superiority of our machinery which will take years to eradicate. The fearful sacrifice of life which occurred on Friday will help to swell that holocaust of victims from boiler explosions, which a writer in the *Pall Mall Gazette* some few weeks since said was necessary before Government would interfere in the interest of public safety. We shall now, of course, have a searching official investigation, and we fain hope the cause will be traced. In the meantime we ask that judgment may be suspended, as otherwise unjust comments may be made upon those who may be undeserving, and who may perhaps be more entitled to sympathy than censure. Let us also remember, too, that all are wise after an event, and may be this fearful explosion is by no means attributable either to inferiority of material used, or defect in construction, but to one of those preventable causes which appertains to all human work and superintendence.

Some curiosity having been manifested as to the cost of machinery supplied to the vessels of our fleet, it may not be uninteresting to give a few figures on the subject. The contract for the engines of the Thunderer—now disabled at Portsmouth—was 46,500*l.* The estimate for the hull was 250,000*l.*, but as this did not include guns or the extra cost involved by her hasty preparation for sea, it is not unlikely that she was worth fully 450,000*l.* when she blew up on Friday last. The cost of the Cornwallis, a 60 ton gun ship, built 20 years ago, was 12,206*l.* for boilers and engines, and about 73,000*l.* for hull and entire fittings. The machinery of the Bellerophon cost 86,960*l.*; that of the Agincourt 83 779*l.*; the Hercules 82,814*l.*; the Northumberland 79,871*l.*; the Minotaur 79,500*l.*; the Warrior and Black Prince 74,400*l.* each; and the Achilles 69,000*l.* Of these ships the Northumberland was the most expensive, costing 471,352*l.*, the Agincourt 455,477*l.*, and

the Minotaur 456,830*l.* The outlay on the ships now building, however, is considerably greater. The Dreadnought, an armour-plated turret ship of four guns, is to cost no less a sum than 508,395*l.*, and of this 107,000*l.* is set apart for machinery. The Alexandra, a broadside ship of 12 guns, will cost 411,980*l.* for hull alone, and the contract price for her engines is 110,500*l.* more.

REPORT FROM CORNWALL.

July 20.—Another very quiet week, with absolutely nothing of importance to report, and certainly no change either actual or imminent to notice. The most recent topic of discussion has been the question of overdrawn mine accounts invoked at East Pool, and particularly the statement of Capt. Abraham James that there are mines in Cornwall which pay 700*l.* or 800*l.* a year in bankers' charges. Of course, it is inevitable that in a business conducted in the practically hand-to-mouth scale that mining is, where large balances in hand are little known, unless they represent the residue of unexpended "limited" capital, that there should be occasional draws on the bank, but this is a state of things which should by no means be allowed to become either general or chronic.

Ninety-nine out of every hundred Cornubians if they were asked which was the richest and most prosperous tin mine in the county would undoubtedly reply Dolcoath; but as there are more things in heaven and earth than are dreamt of in everyday philosophy, so are there more mines in Cornwall than appear in the Share Lists. It was recently remarked in a Western paper—*apropos* of the work of improvement which Major Carlyon is carrying out on his estate at Tregrehan, by removing old mine burrows and doing away with surface disfigurements caused by mining—that mining in the St. Austell district was practically extinct. And undoubtedly, so far as the extent covered goes, it can only be deemed a shadow of its former self. But there are and have long been in that locality mines held in very few hands—small co-partnerships—whose doings are never reported, and whose balance-sheets never appear in the public prints. And so when the statement with regard to the decadence of mining about St. Austell appeared, it was announced upon the highest authority that it was certainly not dead, but that Dolcoath even not excepted, the richest lode now worked, and that from which the largest profits are derived, is within a very short distance of the Cornwall Railway, between St. Austell and Par. The blanks of mining we generally hear all about, but here is a prize, the existence of which is only made known thus casually.

There has been another action for the "put" of mine shares—5*l.* being claimed by James Paull of Thomas Hawke for the "put" of shares of West Poldice. Mr. Bere heard the case, and it having been proved that 5*l.* had been paid by the plaintiff to the defendant for the "put" at 25*l.* per share, he said to Mr. Hawke: "You are not sued for the difference in the price of the shares, only for the 5*l.* which he gave you to carry out the contract. I considered this matter most carefully when the former case came before me, and I am of opinion that the person who gives that money can recover it back from the person who elects to declare the contract void. If he were suing for the difference in the price of the shares he would have to prove a *bona fide* intention on his part to deliver the shares, and a *bona fide* intention on your part to receive them, and his *bona fides* would have been shown by the fact that he had the shares registered in his name at the time. But you have chosen not to carry out the contract, and it is, therefore, very unfair that you should keep the 5*l.* I shall give judgment for the amount claimed, and you must return the money." The law as to "put" ought to be clear enough now. As laid down by Mr. Bere, it certainly is common sense.

Mr. Husband's pneumatic stamps have been working at Great Wheal Vor, with two heads, for the past two months with great success, and without hindrance of any kind. A few days since a large head with lifter, together about 7 cwts., was put to work, and stamped 12 cwts. 2 qrs. of fair average lodestuff in 28 minutes, or at the rate of 30 tons in 24 hours. The two heads in one coffer took 31 minutes to perform the same work. This is unprecedented in the history of Cornish mining. It would require 32 heads of the ordinary stamps to do the same work.

A scientific man of considerable eminence in the West of England has just passed away at the age of 66—Dr. Hearder, F.C.S., of Plymouth. The deceased gentleman's attention was chiefly directed to electricity, in connection with which he made a number of important discoveries, and he was, it is said, the first to propose the laying of a cable across the Atlantic, the cable laid being almost identical with one which he patented. His inventions in mechanics, &c., were numerous, and he took several of the Royal Cornwall Polytechnic Society's medals.

TRADE OF THE TYNE AND WEAR.

July 20.—There is little change in the main feature of the Coal and Iron Trades; the steam coals still occupy the best position in the trade, and most of the large works in Northumberland are well employed. The house coal trade is very quiet, but prices are not altered. There is no change of importance in the iron trade. Pig-iron is likely to fall still further in value, and there is no improvement in the finished iron trade. There has been much uneasiness on the Tyne the last few days, owing to rumours of impending heavy failures of houses engaged in the iron trade in Cleveland. It is, indeed, well known that some of these houses have been involved in financial difficulties for some time. It is, however, possible that these difficulties may be overcome, but only too probable that stoppages will take place, and if this does happen of course many of the coal, coke, and other merchants in the district are likely to suffer severe losses. Owing to the defeat of the Bill brought in by the Tyne Commissioners at the commencement of the session of Parliament all their heavy works in the Tyne have been suspended, and upwards of 1600 men have been thrown out of employment.

[A meeting of creditors of Thomas Vaughan and Co., of Middlesborough, was held on Thursday, when it was resolved that the concern should be converted into a limited liability company. The arrangement made is that the creditors shall take an interest in the new company proportionate to their claims, which will permit the works in North Yorkshire and Durham to be carried on uninterruptedly. This arrangement of a very threatening difficulty has created a great deal of satisfaction throughout the great iron district of Cleveland.]

The 100 ton gun lately manufactured at Elswick was shipped on board the transport ship Europa on Tuesday. The great swing bridge at Newcastle was opened on Monday, and the Europa was the first vessel to pass the bridge, and afterwards was towed up to the wharf at the Elswick Engine and Ordnance Works of Sir W. Armstrong and Co. The removal of the gun was effected in a very short time by the beautiful apparatus lately erected here, the power applied being hydraulic pressure. The Europa will convey the gun to Spezzia, when it will be transferred to the turret ship now in course of building there. Two of these turret ships are to be built, each carrying four of these monster guns. The apparatus used at the swing bridge acted admirably, not only with the greatest precision, but the time occupied is comparatively short, and it is, therefore, not likely that any inconvenience will be caused to the public by the opening of the bridge.

The market at Middlesborough opened rather flat, and did not manifest any improvement at the close. Though there were some enquiries for pig-iron sales were rather limited, owing, perhaps, in a measure to rumours of local financial difficulties. Especially was this the case with forge qualities, as beyond the requirements for shipment the demand is small, except for foundry iron, which is being consumed on a comparatively large scale, as the foundries show an unusual state of activity. Forges and mills which use foreign qualities are, on the other hand, largely closed, and the chief demand for this class of iron is for shipment, and the supply of the plate mills, some addition to whose orders have lately made. Palmer's Iron Shipbuilding Company (Limited), who have orders for six gunboats, torpedo vessels. Otherwise, there does not appear to be much fresh doing in the north-eastern district in shipbuilding. As for merchant and ordinary vessels there is little enquiry, and the low price of freights shows that there is little profitable work offering for vessels. The prices of plate are generally about 6*l.* 5*s.* to 6*l.* 7*s.* 6*d.* Rails and bars are about as last quoted. In pig-iron there has been but little change to the nominal quotations. Buyers have been pressing for lower rates, especially for speculative purposes, but none except needy sellers give way to any extent. The quotations of makers generally are about—No. 1, 49*s.*; No. 3, 45*s.* to 45*s.* 6*d.*; No. 4, 42*s.* 6*d.* to 43*s.* There is no decision with regard to blast-furnacemen's wages. It is believed, however, that the men will accept the reduction at the end of the week. The Coal Trade is dull, and there is very little enquiry. Households, best, 12*s.* at the pits. The coke trade is dull, and prices are 10*s.* to 12*s.* at the ovens for furnace sorts. No change in manufacturing coal.

NORTHUMBERLAND COAL WORKERS IN SOUTH WALES.—The visit of the joint deputation from the coalowners and coalminers of Northumberland to South Wales, for the purpose of enquiring into the Welsh system of working coal, has terminated. A meeting of of miners was held at Aberdare, on Saturday, and was addressed by Mr. John Bryson, President of the Northumberland Miners' Association, and Mr. John Nixon, secretary of the Association. Mr. Nixon said the object of the deputation's visit to South Wales was to enquire into the Welsh system of working coal, having particular regard to the production of "round" and "small." It affected the Northumberland men in this way. The owners of the district held that the men of Wales produced less small coal than the colliers of Northumberland, and it was their desire to bring about some changes in this respect right through the county. In seeking to bring this about the employers did not say "We are going to do so and so;" instead of that, they communicated to those who represented the Northumberland Miners' Association invited them to a conference, asking them to discuss the matter in the first instance, and then to appoint a deputation to go to South Wales and see for themselves the mode of working, with a view to arriving at some new system for Northumberland. Now, the owners would never have taken that course had it not been for the fact that they knew they could not introduce such an important change without first consulting the miners. The fact was this, that no change of wages of any department in the mines of the county ever took place without the full consent of the masters and the employees. The general mode of settlement was this—two coal viewers or managers, accompanied by two coal hewers, would go to the place where the dispute existed, and, after obtaining all information, if they could not agree, would report to the joint council, who would arbitrate upon the same between the parties in dispute. This had been going on for some years, but at the onset things were very different. Employers were then as much opposed to combinations of working men as they were in other districts, but now they could always settle their disputes, and had done so since the new system came into operation, without once having had to resort to a strike.

REPORT FROM LANCASHIRE AND CHESHIRE.

July 20.—There is no change to report in the condition of the coal or iron trades, the state of inactivity which has prevailed for many weeks continuing. Times have not been so bad for many years as they are now, and it is to be feared that unless a change comes the winter will bring great distress. In many cases pits are stopped, and there are not many colliery proprietors who are not employing fewer hands than they were a short time ago. Where the men go to is a mystery. The ironworks too are employing less labour, and in many cases 50 per cent. of the workmen have been discharged. There will, according to rumour, be several large works wholly stopped before the winter sets in.

The proceedings of Bolton magistrates concerning a colliery case which was before them last week are causing much comment. The Wigan Coal and Iron Company prosecuted a collier, and after he had been convicted and fined 2*l.* costs the presiding magistrate informed the solicitor for the company that in the opinion of the Bench the management of the company had been very remiss, and that the facts would be reported to the Inspector of Mines. On the solicitor inquiring in what the remissness consisted the magistrate declined to enter further into the matter. The only point to which the magisterial observation could apply would be found in the fact that the defendant could not read, and that he had pleaded ignorance of the rules, and it was proved on behalf of the company that they had fully complied with the law as to the publishing of the special rules.

At a meeting of the Wigan Explosion Committee, on Monday, it was announced that the grant from the Mansion House Committee of 3512*l.* had been received, and a resolution was passed thanking the Lord Mayor and other members of the committee. The scales of relief were revised, and it was decided to invest 2500*l.* of it.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

July 20.—The Coal Trade of Derbyshire is by no means active, still a great deal more is being done than there was a few weeks since. The leading colliery owners doing largely with the metropolis still complain of the competition that exists between the seaborne and the inland coal, and the low prices that business has to be done at in consequence. Indeed, house coal can be purchased fully as low as during any part of the past five years. There is rather more being done in steam coal, whilst gas nuts and engine fuel are quiet. At the Shirland Colliery (the Miners' Association property) Mr. John Holmes rules the roast in his usual capricious manner, and boasts of having taught the miners of the district a lesson that will be useful to them by sending several to prison for intimidation. At one time Mr. Holmes was an advocate for strikes, as the file of the *Mining Journal* could demonstrate, for he at one time filled some columns showing how strikes raised wages, and how necessary they were to promote the material prosperity of the miner. He also abused in no measured terms Mr. C. Markham, the managing director of the Staveley Company; but now all is changed, for Mr. Holmes reserves all his abuse for the working men, whose servant he is supposed to be. He still invites ardent co-operators to come and work at Shirland, where the wages have been reduced about 20 per cent. lower than at the other collieries in the neighbourhood. Such is the glorious principle of co-operation as worked out by the managing director of the Shirland Colliery.

Most of the Sheffield trades are in a depressed state, more especially the lighter branches. The armour-plate mills have been doing very well, and are likely to continue to do so, seeing that most of the great powers, although declaring in favour of peace, are increasing their armaments and munitions of war. The Bessemer rail mills, although not particularly active, are still well employed, and a few good orders have just come to hand. Table and spring knives, saws, and files are in but moderate request. Most of the foundries are doing very well, the men being fully employed. In South Yorkshire the coal trade is by no means brisk, and the business doing with London is but moderate, whilst prices are by no means remunerative. The strike at Manvers Main, which has lasted since the second week in April, was brought to a close on Tuesday, and it was agreed that work should be resumed on Friday on the terms of the award, and that riddles should be used, for which an allowance of 1*s.* per score corfs, or 10 tons, should be made. It is expected that the men belonging to the Swaithe and Edmunds Main Collieries will come to terms before the end of the week. The dispute in both cases related to the money to be paid for getting coal by wedging, blasting having been abolished.

WINNING OF THE COAL AT THE CARLTON MAIN COLLIERY, NEAR BARNSLEY.—Another large colliery will shortly be added to those engaged in working the well-known and valuable Barnsley seam in South Yorkshire, and which will add largely to the productive power of the district. Carlton is situate about four miles from Barnsley, and the shafts, which have been sunk on the estate of Earl Wharncliffe, from whom about 1300 acres of coal have been leased by the company, are in close proximity to the Midland Railway, to which there is a short branch line. The work of sinking has been under the superintendence of Mr. G. Jessop, the manager, and, despite the many difficulties that were met with and had to be overcome, more especially with respect to feeders of water, the coal was reached in a much less time, considering its depth, than was the case at any colliery in the district. The first sod was turned by Earl Wharncliffe, but it was not until August 31, 1874, that sinking operations commenced, the necessary machinery—permanent and otherwise—having been put down, and as the coal was reached on Saturday night last in the No. 2 shaft, at a depth of 290 yards, the getting down to it occupied less than two years. After the sinkers had made some progress two feeders of water were met with—one giving off 17,000 gallons and the other 15,000 gallons per hour. This required to be tubbed off. Consequently, in each shaft the cast-iron tubbing lined both shafts to a depth of 138 yards—about the greatest length of tubbing to be found at any colliery in South Yorkshire. Below the tubbing the shafts are cased with two rings of brick work of a very substantial character. The diameter of each shaft is 14 ft. inside the tubbing. Owing to the time taken in taking out the pumps and coupling the engines for winding, it will be about eight or nine weeks before the coal is reached in the No. 1 shaft. Nearly all the permanent work has been completed, including the boiler houses, workshops, and other buildings. The engines for winding are in their place, and consist of a pair of horizontal high-pressure 34-inch cylinders each and 6 feet stroke, made by Davy Brothers and Company (Limited), of Sheffield. The drum is 16 feet in diameter, carrying a flat charcoal iron-wire, 3½ in. broad, and 11-16th in. thick, made by Sir George Elliot and Co., at the works at Cardiff. The work of sinking and reaching the coal was accomplished without accident or injury to any of the workmen. Seeing that the surface work is all but completed, but a short time will elapse before a large tonnage of coal will be raised. Work will be found for several hundreds of workmen, so that the quiet, and till lately rural, village of Carlton promises to become a most important mining one. Lord Wharncliffe is building a church for the new population, whilst he has also erected a commodious hotel—no doubt the two being considered essential to the wants of a large population.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

July 20.—Of the Iron Trade this week but little of a favourable nature can be said; and, in fact, the reports which come to hand from the various districts are by no means of an encouraging character. The continental demand appears to have been somewhat disturbed in consequence of the war in the East; and several orders are said to have, for this reason, been suspended. In bars, the demand has again fallen off: and the home enquiry is still exceedingly small. The clearances of rails are unusually small, and are principally to Italy and the Swedish ports. Orders for the Cape and Canada are also in course of execution, and ironmasters are looking hopefully to China to supply them with orders for rails in the future, seeing that the opening of the first railway in that country has been so successfully inaugurated. Tin-plates are unaltered. It is expected that Messrs. Banks and Co. will be able to pay, if time be given, 20*s.* in 1*l.* It was said that the stoppage was due to family litigation alone. Mr. Moggridge, of the tin-works, Caerleon, has also filed a petition. The liabilities are stated to be some 17,000*l.*, and the assets about 14,000*l.* The most friendly relations have always existed between the employer and his men; and the latter have recently held a meeting, at which it was resolved "That, when the works re-start, every employee will give a fourth part of his wages for a period of three months." Mr. Moggridge was present at the meeting, and thanked the men for their generous offer. The chief cause of the stoppage of the works is the depression in trade. Speaking of the tin-plate trade, it may be mentioned that a partial start has been made at the Vernon Tinworks.

The Coal Trade is as bad as ever, and though the exports of foreign are improving during the last few days prices are so miserably low that it is with extreme difficulty that any profit can be realised. Clearances coastwise have diminished, and such is the depressed state of this branch of trade that several of the vessels engaged in the coasting trade have been obliged to lay up. Freights in this department are extremely low. Two local colliery companies have succumbed to the dulness of business. The Eastern demand has not improved. Patent fuel dull. The Northumberland coalworkers have, since I last wrote, visited other parts of the district, and have been everywhere cordially received by their brethren in Monmouthshire.

The South Wales Institution of Miners and Engineers have held their usual quarterly meeting at Cardiff, but the business transacted was of a purely routine character. The Cardiff Field Naturalists' Society have recently paid a visit, among other places, to the Severn Tunnel Works, at Portskewett, which appear to be progressing favourably. One man has died from the effect of the recent colliery explosion at Ebbw Vale, and two others lie in a precarious condition. Two men have been killed at the Werfa Colliery, Aberdare, by a quantity of rubbish falling on them. A mass meeting of colliers has been held at Abertillery, and terminated in a resolution in favour of firmly establishing the National Union of Miners in the locality. The greatest harmony, however, did not prevail among all those present. A vein of steam coal of excellent quality has been struck at Blaengawr, Aberdare, on the property of Messrs. D. Davis and Sons.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

July 20.—Business continues very quiet in the Iron Trade of South Staffordshire, and the prospects of improvement are far from cheering. In the pig-iron branch a few orders are being given out for the better class of foundry pigs for local consumption, but the demand for forge pigs is extremely flat. The course of prices presents no change upon our last report. Finished iron remains on the basis of 7*l.* for common, and 9*l.* to 9*l.* 12*s.* 6*d.* per ton for good branded bars. In all departments of the trade the extent of production has been reduced to a minimum.

Messrs. Solly and Urwick, of Willenhall, availing themselves of the present quiet time of trade, have put out the last of their blast-furnaces to enable them to increase the height of each of the three furnaces by 9 ft., and at the same time put down fresh air-heating apparatus. The firm hope to resume operations in November.

The Coal Trade of South Staffordshire is depressed, and prices of medium and common qualities of fuel are easier. The increase in the available supply of the district will be enormous when the Sandwell Park pits begin to wind, and when the several Cannock Chase concerns, now on the verge of completion, begin to pour their stocks into the market.

The following were among to-day's quotations on the Birmingham Stock Exchange:—Sandwell Park, 25; Hamstead Colliery, par, sellers; Cannock and Huntington, par; Perry Colliery, 1, prem.; West Cannock, New, 2 prem.; Chillington Iron, 4½. The tone of the market is flat and dispirited.

Mr. T. Wynne, the Government Inspector of Mines for North Staffordshire, in his annual report just issued, makes the following pointed and pithy allusion to the use of blasting powder in fiery seams:—"I have year after year pointed out the 'farce' of using locked lamps where the most dangerous of all lights is allowed (blasting), and, therefore, the awful responsibility of sanctioning a course that leads to such terrible losses of life rests on other heads and not on mine. It is some satisfaction to know that nothing would induce the proprietors of the Bunker's Hill Colliery to resume the use of gunpowder, but a very natural question arises—'Whether it be advisable to allow these dire calamities to take place, destroying hundreds of valuable lives, which in the opinion of many persons are preventible by the simple prohibition of the use of explosives in fiery mines?' or, in homely phrase, 'to lock the stable door before the steed is stolen.'"

The Iron Trade of North Staffordshire is without improvement, and the demand for coal is scarcely half the usual average at this season. Ironstone is in abundant supply, but few sales are being effected. Prices all round are irregular and depressed.

SOUTH STAFFORDSHIRE MINES DRAINAGE.—A special meeting of the South Staffordshire Mines Drainage Commissioners was held at Wolverhampton, on Tuesday, Mr. G. J. Barker presided, and there was a numerous attendance, including Mr. J. T. Woodhouse, M.E., one of the arbitrators, Lieut.-Colonel Thorneycroft, Messrs. Rupert Kettle, J. P. Hunt, Walter Williams, F. S. Perry, H. Ward, J. W. Sparrow, and B. Whitehouse. The eleventh report of the arbitrators (Messrs. G. M. Dowdeswell, Q.C., T. Hawksley, C.E., and J. T. Woodhouse, M.E.), on the mines drainage of the Bilston district stated that at the close of 1874 a sudden and great influx of water occurred in the Bilston district, which created grave apprehensions lest the various pumps then employed should be overpowered. This led to arrangements being made for the subdivising of pumping-engines at work in the district. The report goes on to refer to the extreme wetness of last summer, which was followed by the levying of a mines drainage rate. After explaining the geographical position of the district, and mentioning the various faults in the mines of the district, the arbitrators set out a tabulated statement of the collieries, their positions, whether in the crop or not, whether flooded or exhausted, the number of pumping engines, the quantity of water raised daily, and numerous other details. The report concludes by stating that the cost of providing the new engines, and repairing those which require to be started, and making the necessary underground communications will be, as nearly as can be estimated, 45,000*l.* The arbitrators consider that if the list is to be effectually and speedily drained much of the underground driftings must be removed before the communication can be made. These works are estimated to cost 5000*l.* every three months till the whole of them are completed, and that it will take two years or upwards to do the work. This cost will exceed the amount to be realised by the maximum rates that can be levied, and the matter was referred back to the Bilston District Committee, who passed a resolution:—"That the arbitrators be requested to issue a report, with a view to making an award for levying a rate on all the minerals to be raised in the next year, sufficient to produce a sum of 15,000*l.* (gross), and which sum is to be appropriated in payment of working such pumping plants as in their judgment may be required to relieve the district of water in the mines." This was sent on to the arbitrators, who now report that the sum of 15,000*l.* will be inadequate to defray the expenses and charges which will be incurred in unwatering the mines and for meeting the other liabilities consequent upon putting in force within the district the powers of the Act relating to the mines drainage. We hope that arrangement may be effected by the committee, with the aid and approval of the commissioners, for fairly apportioning amongst the several pumps such sum as, after discharging the necessary legal expenses, shall remain from the proceeds of the application of the maximum statutory rates to the minerals raised within the district.

The tenth report of the drainage of the Tipton district was also presented. The arbitrators give similar details as to the position of the pits, pumping, &c., as in the Bilston report, and conclude by stating that the cost of providing new engines and

repairing those required to be started is estimated at 70,000*l.* The cost of works necessary to be done is put down at 500*l.* and the execution of the works will take over two years. As the estimates of the cost of the whole works exceeded the amount that can be realised from the maximum statutory rates - the only provision made by the Act for the unwatering of the mines - was inadequate, the committee afterwards came to the conclusion, from the investigations of the arbitrators and chief engineer, that the sum of 23,183*l.* would effect all that was required, and that committee recommended the arbitrators to issue an amended report, charging all minerals raised for this year at the maximum statutory rates allowed by the Act. The arbitrators regret that unless some arrangement is made with the persons at present pumping, a great portion of the district will be totally submerged. In the face of such a catastrophe they feel it their duty to recommend the Commissioners to levy the maximum rates for the ensuing year. The maximum rate for coal and slack is 6d. per ton, 3d. per ton on ironstone, and 9d. per ton on fire-clay. The Commissioners occupied considerable time in discussing these reports, which were eventually adopted. The annual meeting for the purpose of levying the rates will be held next month.— *Wolverhampton Chronicle.*

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week the market has again been extremely quiet, the only movement of importance being the continued improvement in all the shares of the oil companies. In shares of iron and coal concerns only a small amount of business has been effected, and the movements are generally down wards. Chillington Iron, however, ¼ better. Bolckow Vaughan "B" is at 34¼. Brynmawr, 8. Cairntable, 8. Cardiff and Swansea, 40s. to 50s. Chapel House, 40s. to 80s. Clee Hill, 1s. 6d., sellers. Crown Preserved, 45s. to 55s. Darlington Iron, 25s. Great Western Colliery, 7 to 9. John Bagnall and Sons, 5. Llynvi, Tondu, and Ogmore, 18 to 20. Newport and Abercarn, 35s. to 40s. Oakland Colliery 10 per cent. debentures, ½ prem., sellers. Pelsall Coal and Iron, 7 dis. Rhondda-Merthyr Colliery, 13 to 15. Rhymney Iron, 21 to 22. Scottish Australian, 30s. to 35s. Sheephridge Coal and Iron, 11½ to 12 prem. South Wales Colliery, 7 to 9. Spon Lane Colliery, ½ dis, sellers. Tredegar Iron and Coal "A," 16 to 18. West Cumberland Iron and Steel, 9⅝; and West Mostyn (preference) 68s. to 75s. In shares of foreign copper concerns the principal movement is a fall on Canadian Pyrites, but Cape have advanced 40s. since the report was issued. Yorke Peninsula (ordinary) are at 7s. 6d. to 10s., and 15 per cent. guaranteed preference 17s. 6d. to 18s. 9d. In shares of home mines there has been nothing doing. The reports from Bedford United, Cargoll, Plynlimmon, and Prince of Wales, are of a favourable nature. The Glasgow Caradon sale this month is computed 240 tons; last month 260 were sold, and in the corresponding months of 1875 and 1874, 241 and 240 tons respectively.

Bedford United, 12s. 6d., buyers. Dunsley Wheal Phœnix, 9d. East Van, 7¼ to 8. Frank Mills, 2s., sellers. Glasgow Caradon, 28s. 6d.; ditto (new), 20s. Great Laxey, 17½. Gunnislake (Clitters), 45s. to 55s. Herodsfoot, 50s. to 70s. Killifreth, 18s., buyers. Mwyndy Iron Ore, 35s. to 45s. Pennant Barytes, 70s. to 90s. Pennerley, 25s. to 30s. Penstruthal, 15s. to 17s. 6d. Plynlimmon, 5s. 6d. Roman Gravels, 14½, sellers. Rookhope, 15s. Tankerville, 9¾ to 10⅛. Unity Wood, 27s. 6d., buyers. West Tankerville, 37s. 6d., sellers; ditto (preference), 40s. Shares of gold and silver mines have also been neglected. Emma at 10s. to 15s. show a reduction, while Richmond have improved on the week's run being $32,000. Sweetland shares have dropped to a mere trifle on the reports continuing unfavourable. The Cedar Creek, Chontales, Santa Barbara, and St. John del Rey advices are not remarkable. Javali appears better. The Eberhardt and Aurora returns should cause the shares to go much higher when they attract attention. Chontales are 6s. to 8s. Don Pedro, 1s. 6d. to 2s. 6d. Eberhardt and Aurora, 8¼. Frontino and Bolivia, 50s. to 55s. Javali, 6s., buyers. Malpaso, 10s., sellers. Pestarena United, 6s. 3d.; ditto (preference), 20s. Port Phillip, 5s. Rica, 1s. 3d. to 2s. 6d. Santa Barbara, 34s. to 36s. St. John del Rey, 240. South Aurora, 9s. Sweetland Creek, 4s. 6d. to 5s. 6d. Tecoma, 5s. to 10s. As before noted, a fair business has been done in oil companies' shares at, in every instance, better prices. In miscellaneous companies' shares there is no change. The Scottish Wagon Company recommend a dividend of 6 per cent., carrying forward 1237*l.*, which compares with 5 per cent. at this time last year. Ashbury Railway Carriage and Iron is at 35 to 38 dis.; Hopkins, Gilkes, and Co. (new), 7⅛ dis.; and Patent Shaft and Axletree (preference), 97¼. Details of the several days' business follow (with the exceptions of Saturday and Monday, which were holidays):—

On THURSDAY last market neglected. Bolckow, Vaughan, A, 50 to 50⅛; Clee Hill, 1s. 9d., sellers. Dalmeny Oil, 6, buyers. Frank Mills, 7s. 6d., sellers. Glasgow Port Washington, 41s., buyers; ditto (prepaid) also wanted at 41s. Huntington done at 15s. 6d. and 16s., closing 16s. to 17s. Lochore and Capledrae, 6½ to 6¾. Malpaso, 10s., sellers. Richmond, 8¼ to 8¾. Sweetland, 10s., sellers. Tankerville, about 9¾. Tharsis opened at 20⅛, improved to 20⅜, and after being done at 20f. 6s. 3d., again advanced to 20f. 8s. 9d., closing 20⅝ to 20¾; new shares done at 14, closing 14 to 14¼. Uphall Oil done at 7. West Cumberland Iron and Steel, 9½ to 10. Yorke Peninsula (ordinary), 7s. 6d. to 10s.; ditto 15 per cent. guaranteed preference, 17s. 6d. to 18s. 9d. Young's Paraffin opened at 12¼, declined to 11¾, recovered to 12¾, but again gave way to 12, closing 12 to 12¼.

On FRIDAY very little doing. Bolckow, Vaughan, A, about 50. Chontales, 5s. to 7s. 6d. Don Pedro, 1s. 6d., buyers. East Van, 6 to 6¼. Frontino and Bolivia, 47s. 6d. to 52s. 6d. Javali, 5s. 9d. to 6s. 3d. Lochore and Capeldrae, 6½ to 6¾. Omoa and Cleland, done at 35s. Pennant Barytes, 85s., sellers. Pestarena United, 6s. 3d., sellers. Plynlimmon, 4s. to 6s. Richmond, 8¼ to 8⅝. Roman Gravels, 14¼ to 14¾. Rookhope, 15s. to 17s. Sweetland Creek, 5s. 3d., sellers. Tankerville, 9¾ to 9¾. Tharsis, 20⅜ to 20½; new shares, 14 to 14⅛. West Mostyn (pref.), 65s. to 75s. West Tankerville (pref.), 39s. to 41s. Young's Paraffin done at 12; closing 11⅞ to 12. Scottish Wagon done at 10¾.

On TUESDAY more business done. Bedford United, 7s. 6d., buyers. Benhar done at 10f. 6s. 3d. and 10f. 7s. 6d., closing 10¼ to 10⅜. Bolckow, Vaughan, A, 49⅛ to 49½. Canadian Copper Pyrites done at 22s. and 19s. 6d., closing 16s. to 19s.; Chontales, 6s. to 8s.; Clee Hill, 1s. 6d., sellers.; Don Pedro, 1s. 6d. to 2s. 6d. Ebbw Vale, done at 10, closing 10 to 10¼. Emma done at 12s. 6d. Glasgow Port Washington, 41s. 6d., buyers. Huntington, 15s. to 17s.; Javali, 5s. 9d. to 6s. 3d.; Killifreth, 16s., buyers; Lochore and Capeldrae, 6½ to 6¾. Markland (pref.) done at 89s. Pennant Barytes, 70s. to 90s.; Pestarena United, 6s. 3d., sellers; ditto, preference, 20s., sellers. Richmond done at 9⅛, closing 9 to 9¼; Sweetland Creek, 4s. to 6s. Tharsis, done at 20¾ and 20½, closing at these prices; new shares done at 14, closing 13⅞ to 14. Unity Wood, 27s. 6d., buyers; Uphall Oil, 7 to 8; West Cumberland Iron and Steel, 9⅝, sellers; West Tankerville, 37s. 6d., sellers; ditto, preference, 40s., sellers; Yorke Peninsula (ordinary), 7s. 6d. to 9s. 6d. Young's Paraffin done from 13¼ to 13⅜, closing 12¾ to 12½. Scottish Wagon done at 10¾.

NEW COAL COMPANY.—Notwithstanding the present condition of the coal trade a new company, called the Clyde Coal Company (Limited), has just been formed. The share capital is 150,000*l.*, in shares of 10*l* each, of which 83,000*l.* is the purchase money for the mineral leaseholds and mining plant. The coal fields to be worked are situated in the Bothwell and Hamilton districts of the Lanarkshire coal basin, and contain an area of about 1350 acres. They are most conveniently situated for Glasgow and the markets and shipping ports of the West. The seams of coals in the fields (except in Jervis on) are the Ell coal, the Protshaw, the Main coal, and the Splint coal. In Jerviston the seam is the Virtue Well coal. The colliery plant is of a character to command an output of over 2000 tons per working day, and it is believed the resources of the coal fields are sufficient to provide this output for the currency of the leases, but the incorporation of the company will admit of their extending their operations to other fields. It is expected coal will be got from some of the pits for the ensuing winter.

On WEDNESDAY market idle. Bedford United, 12s. 6d., buyers. Benhar (new), 6⅞ to 7⅛. Canadian Copper Pyrites done at 13s., closing 13s. to 14s.; ditto (new) done at 18s., closing 2s. 6d. to 5s. Chapel House, 40s. to 50s. Dalmeny Oil done at 6¼ to 7, closing 7 to 8; ditto (all paid), 10, sellers. Emma, 10s. to 15s. Gunnislake (Clitters), 45s. to 55s. Javali, 6s., buyers. Pennerley, 32s. 6d., sellers. Prince of Wales, 7s. to 8s. Richmond done at 9¼, closing 9¼ to 9⅜. Santa Barbara, 34s. to 36s. Tharsis done at 20f. 8s. 9d., closing 20f. 7s. 6d. to 20f. 8s. 9d.; new shares, 13⅞ to 14. Uphall Oil, 7¼ to 8. Unity Wood, 27s. 6d. to 30s. Yorke Peninsula (ordinary), 7s. 6d. to 10s. Young's Paraffin done at 12¾, closing 12¼ to 12¾.

Subjoined are this week's quotations, &c., of mining and metal shares quoted on the Scotch Stock Exchanges:—

Capital. Per share.	Paid up.	Dividends. Rate per cent. per annum. Previous.	Last.	Description of shares.	Last price
£10	£6	£10	£ 8½	COAL, IRON, STEEL. Arniston Coal (Limited)	7¼
10	10	14	9	Benhar Coal (Limited)	10¾
10	7	14	9	Ditto	7
100	40	12½	7½†	Bolckow, Vaughan, and Co. (Lim.)	A. 49
10	10	10	10	Cairntable Gas Coal (Limited)	8
10	10	5	nil	Chillington Iron (Limited)	4¼
32	29	7	½†	Ebbw Vale Steel, Iron, and Coal (Lim.)	10½
10	5	nil	nil	Fife Coal (Limited)	3½
10	10	—	—	Glasgow Port Washington Iron & Coal (L)	41s. 6d.
10	10	—	—	Ditto Prepaid	41s.
10	10	—	—	Lochore and Capledrae (Limited)	6¾
10	10	nil	nil	Marbella Iron Ore (Limited)	62s.
10	10	nil	nil	Monkland Iron and Coal (Limited)	45s.
10	10	7	7	Ditto Guaranteed Preference	89s.
100	100	nil	nil	Nant-y-Glo & Blaina Ironworks pref. (L)	30
6	6	15	nil	Omoa and Cleland Iron and Coal (Lim.)	3⅝s.
1	1	12½	15	Scottish Australian Mining (Limited)	30s.
1	8s.	12½	15	Ditto New	8s. 6d.
50	50	10	5	Shotts Iron	53
10	10	10	5	Ditto New, issued at 2½ prem.	9¾
				COPPER, SULPHUR, TIN.	
4	4	—	—	Canadian Copper Pyrites (Limited)	13s.
4	3	—	—	Ditto (£3 paid)	2s. 6d.
10	7	20s ‖	20s ‖	Cape Copper (Limited)	40
2	2	—	—	Dunsley Wheal Phœnix Tin (Limited)	9d.
1	1	12½	15	Glasgow Caradon Copper Mining (Lim.)	28s. 6d.
1	15s.	12½	12½	Ditto New	20s.
10	9	—	nil.	Huntington Copper and Sulphur (Lim.)	16s.
25s.	23s.	—	—	Kapunda Mining (Limited)	2d.
4	4	—	—	Panulcillo Copper (Limited)	3⅝s.
10	10	6†	6†	Rio Tinto (Limited)	5
20	20	—	—	Ditto, 7 per cent. Mortgage Bonds	14
100	100	—	—	Do., 5 p.ct. Mor. Deb. (Sp. Con. Bds.)	53
10	10	nil	nil	Russian Copper (Limited)	55s.
10	10	25	22½	Tharsis Copper and Sulphur (Limited)	20½
10	7	25	23½	Ditto New	14
1	1	—	—	Yorke Peninsula Mining (Limited)	7s. 6d.
1	1	—	—	Ditto, 15 per cent. Guaranteed Pref.	17s. 6d.
				GOLD, SILVER.	
1	1	5	5	Australian Mines Investment (Limited)	8s. 9d.
20	20	—	—	Emma Silver Mining (Limited)	13s. 6d.
10	10	—	—	Flagstaff Silver Mining (Limited)	35s.
5	5	—	—	Last Chance Silver Mining (Limited)	10s.
5	5	—	35	Richmond Mining (Limited)	9¼
				OIL.	
10	7	5	5	Dalmeny Oil (Limited)	7
10	10	—	2½	Uphall Mineral Oil (Limited)	7⅛
10	8½	5	9	Young's Paraffin Light & Mineral Oil (L)	12⅛
				MISCELLANEOUS.	
50	25	16	16	London and Glasgow Engineering & Iron Shipbuilding (Limited)	20
20	14½	—	—	Peruvian Nitrate (Limited)	12
10	10	8	5	Scottish Wagon (Limited)	10¾
10	4	8	5	Ditto New	8⅞. 6d.

† Interim. ‖ Per share.

Last day for this account July 25; settling day, July 28.

NOTE.—The above lists of mines and auxiliary associations is as full as can be ascertained, Scotch companies only being inserted, or those in which Scotch investors are interested. In the event of any being omitted, and parties desiring a quotation for them and such information as can be ascertained from time to time to be inserted in these lists, they will be good enough to communicate the name of the company, with any other particulars as full as possible.

J. GRANT MACLEAN, Stock and Share Broker.
Post Office Buildings, Stirling, July 20.

UTILISATION OF ANTHRACITE SLACK.

Many attempts have been unsuccessfully made in America to introduce the Belgian system of utilising small coal in agglomerating anthracite with some suitable cementing material and pressure, but they have proved too expensive to permit of their application, except for the manufacture of domestic fuel. Mr. Wootten, the superintendent of the Reading Railroad, has, therefore, invented a process which requires neither mixture nor pressure. The culm is shoveled into the fire and burned by the aid of a blast. In stationary engines the ash pit is entirely closed, except a small hole in the bottom sufficient to admit the pipe conveying the blast. The grate, instead of being of bars, as usual, is of perforated sheet-iron. The blast is created by a small jet of steam, which is admitted through a pipe into another pipe about 20 times its diameter, and shaped like the frustra of two cones, apex to apex. The vacuum created by the steam escaping into this pipe causes an enormous draft of air. The pipe leading to the orifice is closed by a valve, held in place by a spring in such a way that the pressure of steam closes the valve, and so regulates the supply. The strength of the spring is regulated to a certain steam pressure, say 100 lbs. When the pressure has reached this point the supply of steam to the blast is shut off, and the fire is less fierce. On the reduction of the pressure the spring relaxes, and the blast acts again. There is also a valve that covers the mouth of the orifice leading into the fire-box, which also works automatically, closing the orifice when the blast is not working, and so preventing a waste of either volume or pressure of blast. Generally two or three blasts are used under the fire-box of an engine.

The invention has also been successfully tested on a locomotive and in a steam vessel. It was soon evident that if the ordinary exhaust of the locomotive was used for the blast it would be so strong as to carry the fuel up and out of the smoke stack, as well as being too irregular. The use of the exhaust is practically abandoned, and a blast is produced under the ash pan by a jet operated with the waste steam. In order to utilise the heat of the waste steam it is taken through a series of pipes, which act as a condenser of a steam-engine. The water from the tender passes through or around these pipes, and the water is heated. About one-third of the steam is condensed. The balance passes out by a pipe to the top of the stack, but finding no escape it passes by a 6-inch pipe down and through an annular ring, and back under the ash-pan, where it is used as a blast in the manner described. With regard to its economic results, Mr. Gowen states that 1 lb. of culm from ordinary coal, and of the ordinary run of waste, evaporated 8½ lbs. of water—within about 1lb. of the result obtained from the same amount of best coal. Culm taken from a bank at the mouth of a pit that had been idle for 40 years evaporated 6½ lbs. of water for 1 lb. of fuel.

CANFIELD MINERAL DRESSER.

The mineral dresser, invented by Mr. F. A. CANFIELD, of Dover, New Jersey, is very favourably spoken of by Prof. T. Egleston, of Columbia College, who says that the expense of the instrument is not large, and it will earn its cost to a collector in a very few weeks. The dresser consists of a cast-iron bed plate planed and slotted at one end to receive a movable head, and is slightly tapered at the other to allow of greater motion of the head round the pin upon which it moves. The head, also of cast-iron, is planed to fit the slot in the bed plate. On its side there is a projection fitted with a semicircular hole for receiving a clamp, which holds it in place when adjusted. The head is entirely of wrought iron; it is bulged slightly at one extremity to secure a steel screw, which is moved by a hand-wheel, and has a very slow motion. Both heads are bored out tapering to secure the cutting chisels, which may be made of any shape, so that the action of the machine may be made to be either that of a chisel or that of the shears. To use the machine the sliding head is freed. This is done by removing the steel wedge which holds the steel clamp in position. This clamp fits into notches in the under side of the bed-plate and into the circular slot in the back of the head, and is kept from falling by a brass spring. The specimen to be operated upon is placed between the two chisels, the screw having been previously run down so that the chisel of the head is slightly above that of the head. The chisels are then turned at an angle so as to suit the specimen, and the moveable head run up against the specimen. The clamp is then secured by the wedge. As the specimen is not tight between the chisels it is held in the hand while the head is being fastened. The screw is then slowly turned; this causes the chisel of the head to advance slightly. The two cutting surfaces being exactly opposite each other, the hardest rock will soon yield under the pressure, and will almost invariably be cut off square. If one hand is kept on the specimen when the cutting takes place it will be found that there is a slight jar at the moment the specimen is cut, but not sufficient to detach the most delicate crystals. Specimens containing very fragile crystals on both sides of a very hard rock have been cut in two, thus giving two specimens, when a single stroke of the hammer would have destroyed most of the crystals on both sides of the specimen. Since the introduction of this machine in November last the hammers and chisels of the School of Mines have been consigned to a drawer, as there is rarely occasion to use them, and we no longer fear to trim a specimen of any size, no matter how hard the rock or how delicate the crystals.

When the machine is to be used on soft rocks or in trimming fossils it is provided with a lever arm, which straddles the long arm of the head, and is fastened by means of a pin, which can easily be removed when the arm is not wanted. To use it the screw is turned up so that the long arm of the head rests on the bed-plate, the head is then adjusted, and by a series of quick movements toward the specimen the instrument is made to detach the rock. By changing the form of the chisel the two cutting surfaces may be made to act like shears, so as to cut specimens of shale exactly without breaking them. This instrument is invaluable to collectors of minerals and fossils, as it allows of the greatest precision in preparing specimens for the cabinet, since it is no longer necessary to dress a large quantity of superfluous rock for the sake of preserving a few crystals on it. To suit the varying shapes of specimens chisels of any shape or size can be made to fit the heads. It has been found, however, that three shapes are all that are necessary.

COAL AND IRON IN THE UNITED STATES.—The decrease in the production of pig-iron in the United States in 1875 as compared with 1874, was 422,832 tons, or more than 15 per cent. The following States, however, increased their production of pig-iron in 1875:—Maine, Virginia, Georgia, Indiana, Illinois, and Wisconsin. The quantity of coal carried over the Philadelphia and Reading Railroad in the year ending Nov. 30, 1875, was 5,505,455 tons, as compared with 6,348,812 tons in the year ending Nov. 30, 1874. The total production of anthracite coal in Pennsylvania to June 24 this year was 7,726,534 tons, against 6,462,211 tons in the corresponding period of 1875, showing an increase of 814,323 tons this year. The production of bituminous coal in Pennsylvania to June 24 this year was 1,598,417 tons, against 1,638,545 tons in the corresponding period of 1875, showing a decrease of 40,128 tons this year. The Chicago and North-Western Railway Company will lay 175 miles of steel rails upon its track this year. American iron rails have been quoted at the works at $40 to $43 per ton currency; old American iron rails have brought $21 to $22 per ton currency.

TAKE NOTICE that the BRITISH DYNAMITE COMPANY (LIMITED) have recently INSTITUTED PROCEEDINGS in CHANCERY, before the Vice-Chancellor HALL, having for their object to RESTRAIN the PERSONS named therein as DEFENDANTS from MANUFACTURING or SELLING a compound called LITHOFRACTEUR, or any compound containing NITRO-GLYCERINE, absorbed with porous unexplosive substances, or absorbed in porous combustible mixture; AND TAKE NOTICE that such PROCEEDINGS will be shortly BROUGHT to TRIAL, and that such COMPOUNDS, the sale of which is so sought to be restrained, CANNOT be SOLD by any PERSON other than the Plaintiffs without infringing the Plaintiff's Patents of the 7th May, 1867, and the 12th February, 1869.

J. AND R. GOLE, 49, Lime-street, London, E.C.,
Solicitors for the British Dynamite Company (Limited).

CHROMATE OF IRON.
REDUCED UPSET PRICE.

THIS VALUABLE MINERAL, in the extensive COMMONTIES of BALLIASTA and HAROLDSWICK, in UNST, SHETLAND, as formerly advertised, will be RE-EXPOSED within Dowell's Rooms, 18, George-street, Edinburgh, on Wednesday, 2nd August, at Two P.M.

Apply to Messrs. STUART and CHEYNE, W.S., 56, Frederick-street, Edinburgh, with whom are the conditions of sale, plans, &c.

IRONWORKS FOR SALE IN CANADA.

THE ATTENTION of CAPITALISTS is called to the SALE of the extensive ROLLING MILL, FORGE, and NAIL FACTORY at MONTREAL, and of the PROPERTY at RIVER MOISIC, consisting of 338½ acres of LAND, BUILDINGS, IRON MINE, MAGNETIC IRON SAND, IRON STEAMER, SCOWS, &c., &c., all belonging to the Insolvent Estate of the MOISIC IRON COMPANY, MONTREAL.

For this valuable estate Tenders will be received up to the 23rd August next, at noon, and full information will be given by—

WILLIAM RHIND, Assignee.

18, St. Francois Xavier-street, Montreal, June 26, 1876.

MINES SOUTH-WEST OF IRELAND.

VALUABLE MINES OF SILVER-LEAD, ARSENICAL PYRITES, COPPER, and IRON, two miles long on the run of the lodes. TO BE LEASED, on highly favourable terms.

Capitalists only may apply to "T. W.," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

A PROMISING LEAD MINE FOR SALE.

THE SOUTH WARD MINE, situated near Calstock, on the River Tamar, with a 22-in. PUMPING and DRAWING ENGINE, 90 tons of PITWORK, CRUSHER, and all other appliances, is now OFFERED FOR SALE.

All particulars will be given on application to "The Secretary," St. Andrew's House, 28, Cornhill, London.

TAMAR VALLEY SILVER LEAD MINE, DEVON.

TO BE SOLD, BY PRIVATE TREATY, by the executrix of the late GEORGE PELL, Esq., deceased, all that desirable MINING SETT, situate in the parish of BEERFERRIS, in the county of DEVON, together with the MACHINERY and MATERIALS now in use on the said mine, which will be offered FOR SALE as a GOING CONCERN.

For plans and particulars, apply to WALTER EDDY, Esq., Llangollen; and to view, to Capt. TRURAN, on the Mine.

TO IRONMASTERS, MINE OWNERS, BROKERS, &c.

FOR SALE, the STOCK, PLANT, and LEASE of a HEMATITE MINE on the WEST COAST. None but responsible parties treated with. Present depression taken into consideration in selling price.

Address, "Hematite," MINING JOURNAL Office, 26, Fleet-street, London.

TO LEAD MANUFACTURERS, LEAD MERCHANTS, CAPITALISTS, AND OTHERS.

A RARE OPPORTUNITY now occurs for the PURCHASE of the LEASE and MACHINERY of large and well-known LEAD WORKS near LONDON. The works have been in active operation for many years past, and the machinery, which is in good going order, is capable of manufacturing from 100 to 150 tons of sheet lead and pipe weekly.

To capitalists this is recommended as an investment. Principals or their solicitors only treated with.

Further particulars may be had on application to Messrs. FENNER, HILTON, and GIFFORD, Accountants, of 2, Gresham Buildings, Guildhall, London, and of 12, Bond-street, Brighton; and of Messrs. BLACKFORD, RICHES, KILSBY, and WOOD, Solicitors, of No. 21, College Hill, Cannon-street, London, E.C.

TO PROMOTERS OF MINES.

ONE-FIFTH of a new SILVER-LEAD and COPPER SETT TO BE DISPOSED OF to any gentleman who will undertake to sell it, or to FORM A COMPANY FOR WORKING THE SAME.

For further particulars apply to "S.," Post Office, Combmartin, near Barnstaple.

SULPHATE OF BARYTES FOR SALE.—Fine powdered, beautifully white; also in the Rock or Crude State, free from Lime and Metallic Oxide.

Samples on application to—

RUTHWAITE BARYTES MINING COMPANY,
Nov. 17, 1875. WHITEHAVEN.

DOLGOCH SLATE AND SLAB COMPANY
(LIMITED).

Capital £30,000 in 3000 shares, of £10 each.

Deposit, £1 on application, £2 on allotment.

Established for working the veins of slate under Dolgoch Farm, 1½ mile west of the celebrated Bryn-yr-Eglwys Quarries, Towyn, Merionethshire.

The following are extracts from the reports:—

"As a manager of a slate quarry of 23 years standing, I give it as my opinion that the quality of the rock is as good and the split as fine as that of any quarry in Festiniog, while the waste will be less than that of most of those quarries."

WILLIAM ROWLANDS.

Votty and Bowydd Quarries, Festiniog, April 27, 1876.

Aberystwith Enamelled Slate Works, April 29, 1876.—"In our opinion equal for this purpose to Aberllyfenni Slate Rock."

ELLIS and OWEN.

Prospectuses, forms of application for shares, and full information may be obtained of the Secretary of the Dolgoch Slate Company, Aberdovey, Merioneth, or Messrs. HARRISON and BONNOR-MAURICE, Welchpool; or Messrs. FALLOWS and BROWN, 4, Lancaster-place, Strand.

BRADWELL MOSS RAKE MINING AND LEAD ORE SMELTING COMPANY.
(LIMITED).

THIS COMPANY'S MINES extend for more than half-a-mile on one of the strongest LEAD VEINS in DERBYSHIRE. In driving the adit level, running in part through the old men's workings, there have been raised and sold upwards of £1200 worth of ore, and the ore is exceptionally rich.

The mine has a NEW STEAM ENGINE, BOILER, and CRUSHING MILL, and other appliances, and the main shaft has been already sunk 15 yards below the adit level, so as to get under the old men's workings; and it is the opinion of the miners of the neighbourhood that when sunk a little deeper and the level driven an immensely profitable mine will be laid open.

The working and management are most economical, for the mines have been obtained and developed and new machinery bought and erected on a capital of 4000 shares, of £1 each.

To develope the mines more rapidly, TWO THOUSAND additional SHARES have been created, and part are OFFERED to the PUBLIC at par price of £1 each.

The first applicants will receive allotment, and any desirous of embarking in a sound profitable investment should apply at once, before the shares rise to a great premium, which they cannot fail shortly to do.

Payment must be made of 10s. per share on application, and 10s. on allotment.

Letters to be addressed, and orders or cheques made payable, to the Vice-Chairman, Mr. JAMES BURNS, at the office of the Secretary, Mr. THOMAS BROADBENT, Tadwell, near Hope, Derbyshire.

MANGANESE AND SULPHUR ORES.

MESSRS. BROWN, BUTLER, AND CO.,
MINERAL MERCHANTS, AGENTS, AND BROKERS,
Are OPEN to TREAT for the PURCHASE of LARGE QUANTITIES of the ABOVE or other MINERALS, to be delivered in Liverpool.

Address, with particulars, stating quality and price, to Brockley Buildings, South John-street, Liverpool.

LONDON OFFICES: 109, UPPER THAMES STREET, E.C.

MESSRS. KEENE AND LAMBERT,
STOCK AND SHARE BROKERS,
METROPOLITAN BUILDINGS, 63, QUEEN VICTORIA STREET, E.C.
Bankers: London and Westminster Bank, Lothbury.

MESSRS. T. VOSPER AND CO.,
MINERAL AND GENERAL ESTATE AGENTS
48, FINSBURY CIRCUS, LONDON.

T. V. and Co. have ON OFFER several Freehold Estates, Collieries, China Clay, Slate, and Lead Properties, direct from owners.

Shares in the NEPTUNE COPPER MINE may be relied on as a good investment at present prices. They have also Shares in two or three Lead Mines in Wales well worth the attention of investors.

Business is being done privately in the undertakings referred to, and investors will find them worthy their attention.

MONEY ADVANCED, in sums of £500 and upwards, on FREEHOLD or LEASEHOLD PROPERTY, SHARES, STOCKS, and PERSONAL SECURITY.

Address, THORNYCROFT and Co., Accountants, Mortgage Brokers, Valuers, &c., 36, Brockley Buildings, South John-street, Liverpool.

In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the WHEAL WREY, LUDCOTT, AND NORTH TRELAWNY MINING COMPANY (LIMITED).—The Registrar of this Court has appointed Friday, the 28th day of July inst., at Eleven o'clock in the forenoon, at the Registrar's Office, at Truro, to SETTLE THE LIST OF CONTRIBUTORIES OF THE ABOVE-NAMED COMPANY, now made out and deposited at the said Office.

FREDERICK MARSHALL, Registrar.

Dated Registrar's Office, Truro, the 19th day of July, 1876.

FLINTSHIRE.—VALUABLE FREEHOLD ESTATE, LIMEWORKS, LEAD MINES, SIDING TO RAILWAY, WATER CORN MILL.

MESSRS. CHURTON, ELPHICK, and CO., WILL SELL, at the Queen Hotel, Chester, on Saturday, the 12th day of August, 1876, at Two for Three o'clock P.M. punctually, subject to such conditions as shall be then and there produced. ALL that MOST SUBSTANTIALLY ERECTED and VERY COMMODIOUS DWELLING HOUSE called

TRIMLEY HALL,

With extensive outbuildings, yards, gardens, plantations, and land, containing in the whole 78 acres or thereabouts, situate in Uchymynydd Ucha, in the parish of Hope, near Wrexham, in the occupation of Mr. Taylor, as tenant from year to year; and also all those VALUABLE LIME ROCKS, with all the RIGHTS, PRIVILEGES, and APPURTENANCES belonging thereto. These rocks are let at a dead rent of £100 per annum, a royalty on all limestone got and lime burnt, and extra rent for surface ground occupied.

A siding has been made to connect the works with the Wrexham and Minera Railway, which passes through the estate.

A STEAM ENGINE, STEAM BOILER, lime kilns, and stone crushing apparatus, and other buildings have been erected by the tenants.

The works are in excellent order, and it is anticipated that very large royalties will be realised as they become better known.

Also all those extremely VALUABLE VEINS of LEAD and OTHER ORES in and under the same land; also a yearly ground rent of £8 per annum arising out of Frith Mill, an old established and well accustomed corn mill, erected on the stream by Messrs. Lewis, who took the site from a former owner for a long term ending the 29th September, 1903; also the reversion of the same mill, land, and premises, to take effect in possession on the 29th September, 1903, or other sooner determination of the said term.

The above property is about 1 mile from Brymbo, a telegraph station on the line, 2 miles from Hollybush, adjoining the turnpike road from there to Tryddyn, 5 miles from Wrexham, Rossett, and Hope, 6 from Mold, and 12 from Chester.

Any further particulars may be had from Messrs. WITHINGTON, PETTY, and BOUTFLOWER, solicitors, 24, Brown-street, Manchester; or Messrs. CHURTON, ELPHICK, and Co., Auctioneers, Chester, and Whitchurch, Shropshire.

IN VOLUNTARY LIQUIDATION.

FOR SALE, on Thursday, the 17th day of August next, at Two o'clock, at the Law Association Rooms, Cook-street, Liverpool, all those VALUABLE MINES—CATHARINA, EMILIENS FRENDE, HAUNCHEN, and MARIECHEN, known collectively as the

BENSBERG LEAD MINE,

Situated at BENSBERG, near COLOGNE, on the Rhine, together with all the MACHINERY, FIXED and LOOSE PLANT, now in working order.

The concession is for 15 years, from 1st January, 1876. The area of property is about four square miles, at an annual rental of 35 thalers, and the low royalty of 2 per cent. per annum on the profits.

The works can be inspected at any time on application to the Manager.

For further particulars, apply to Mr. A. W. CHALMERS, No. 5, Fenwick-street, Liverpool, where the lease, &c., can be seen.

IN LIQUIDATION.

FOR SALE, BY PRIVATE TENDER, a LEASEHOLD MINERAL PROPERTY, with complete MACHINERY, including a BLAKE'S STONE BREAKER, near the Railway Station in NANTTLE VALLEY, CARNARVONSHIRE.

There are 15½ years unexpired of lease, which grants power to take the minerals, consisting of LEAD, COPPER ORES, UMBERS, &c., under 365 acres. Small fixed dead rent merging into royalties. The property can be sold separately.

Apply for particulars and Form of Tender to Mr. J. W. TILLY, Victoria Buildings, Queen Victoria-street, E.C., London, Official Liquidator.

THE EAST NANT-Y-MWYN LEAD MINING COMPANY
(LIMITED).
VOLUNTARY LIQUIDATION.

THE LEASE, PLANT, MACHINERY, and EFFECTS of this Company, offered for Sale by Public Auction at Swansea on Wednesday last, July 19, 1876, WERE NOT THEN SOLD. The whole of the said property and effects are NOW OFFERED FOR SALE, BY TENDER, in One Lot.

Sealed tenders to be sent not later than TWO P.M. on Tuesday, August 1, 1876 (on which day they will be opened), to the Liquidator, Mr. CHARLES WARE, Public Accountant, 1, Shannon-court, Bristol, of whom inventories of machinery, plant, &c., and all requisite information may be obtained; also of Messrs. FOX and WHITTUCK, solicitors, Corn-street, Bristol; or Messrs. ALEXANDER DANIEL and Co., Auctioneers, Broad-street, Bristol.

The Liquidator does not bind himself to accept the highest or any tender.

TO CAPITALISTS, SOLICITORS, WIRE-DRAWERS, TIN-PLATERS, AND OTHERS.

FOR DISPOSAL, BY PRIVATE CONTRACT, owing to a Dissolution of Partnership, SOME OLD-ESTABLISHED AND MOST COMPLETE

ROD AND WIRE WORKS,

Situate in MONMOUTHSHIRE, with the GOODWILL, STOCK-IN-TRADE, and PLANT of the present Business, including ONE FIXED and ONE LOCOMOTIVE STEAM ENGINES.

The works are held under lease for a term of which 20 years are unexpired. The machinery is in working order, and still going, and the principal motive-power is water.

The works could be admirably adapted for the manufacture of alkali or tin-plates, in addition to the wire-drawing now carried on.

The Lease includes a FARM, of about 40 acres of pasture and meadow land, orchards, &c., with HOMESTEAD, TWO GOOD DWELLING HOUSES, and about FORTY COTTAGES.

There is abundant facility of transport; a branch railway runs into the works, and a navigable river bounds them on one side.

Principals and solicitors only dealt with.

Apply to TANSLEY WITT, Accountant (Receiver and Manager of the Estate), 67, Chancery lane, London, W.C.

BERCUNES MINE, NEAR LINDAL-IN-FURNESS.

TO BE SOLD, BY PRIVATE TREATY, all that VALUABLE HEMATITE IRON ORE MINE, situate at LINDAL-IN-FURNESS, and known by the name of—

"BERCUNES,"

As the same was recently worked by WORDSWORTH HARRISON, Esq., J.P., together with the ore at bank, about 100 tons, and the following MINING PLANT:—

ONE STEAM BOILER with fittings, 500 feet of steam piping, 2 winding gins, 1 gin rope, 2 patent steam pumps, 1 hoisting crab and rope, 4 wheelbarrows, 6 picks, 36 pick shafts, 2 shovels, 4 saws, 1 axe, 2 hammers, 15 hammer shafts, 4 large water casks, 8 mine buckets, 4 barrels, 2 pair of standards, 2 tumbletrees, 2 augers, 2 tumbletree ropes, 3 fire pans, 500 yards of water troughing, and about 3000 feet of larch pit wood.

The Mine has been thoroughly proved, and a steady output may, it is believed, be relied upon.

For conditions of sale, and further particulars, apply to ALAN B. SALMON, Solicitor, Ulverston, and Barrow-in-Furness.

CARDIGANSHIRE.
NEW LISBURNE MINE.

TO BE SOLD, BY PRIVATE CONTRACT, by the Executrix of the late GEORGE PELL, Esq., deceased, a FREEHOLD ESTATE, with the MACHINERY and MATERIALS now in use thereon, comprising the above Mine, together with the MINING LEASES of adjoining properties, as a going concern.

It is believed the lodes of the Mine are a continuation of the well-known Logylas.

For plans and particulars apply to WALTER EDDY, Esq., Llangollen; and to view, Capt. BALL, on the Mine.

SPELTER WORKS.

TO BE SOLD, the LEASE and PLANT of the UPPER WORKS, BAGILLT, FLINTSHIRE, extending over about TWENTY-SEVEN ACRES of LAND; also about FOUR AND A QUARTER ACRES of FREEHOLD LAND, and one undivided third part or interest in the DEE BANK WHARF, adjoining the said freehold.

The plant is at present sufficient for the production of 30 tons of spelter per week and may easily be increased (the greater part of the land being let off for farming); there are extensive buildings for storing blende, and heated rooms for making and storing retorts.

The works are now in operation, and with a production of only about 11 tons of spelter per week considerable profit has been realised during the last two years. There are several collieries in operation in the immediate neighbourhood, and the works are within easy reach of the North Wales blende-producing mines.

The freehold land above mentioned almost adjoins the leasehold property, and is bounded on three sides by a large colliery, the Dee Bank Wharf named above, and the River Dee respectively. It is traversed by the Chester and Holyhead Railway, and situated within a few hundred yards of the Bagillt Railway Station. The site is, therefore, an unusually favourable one for the erection of works.

Apply to H. C. CARVER, Llanidloes, Montgomeryshire.

TO CAPITALISTS OR PROMOTERS DESIRING TO MAKE MONEY.

TO BE SOLD, a COLLIERY ROYALTY in NORTH WALES, close to rail or shipping port; several shafts partially sunk; coal fully proved of FOUR SEAMS of good HOUSE and STEAM COALS, in an area of upwards of 400 acres of surface. It adjoins the West Mostyn Coal Field, just successfully launched, where under seams (including Cannel) have been proved in addition to the above; so that eminent engineers state that the available coal in this royalty may be 88 feet thick.

Present holder will arrange to sell the entire to an individual or company for what it has cost him, dividing all profit made above, which, even in a normal state of the coal trade, must be large. Certain and safe surveys by eminent Staffordshire and Welsh engineers have already been made.

Address, Mr. WATSON, 27, Hamilton square, Birkenhead.

THE FRON HALL LEAD MINING COMPANY
(LIMITED),

MOLD, COUNTY FLINT, NORTH WALES, require

A CORNISH PUMPING ENGINE, either beam or direct-acting, about 60 in. diameter of cylinder and 9 ft. stroke.

A COMPLETE SET OF PLUNGER LIFT, 60 yards long, 24 in. diameter.

A COMPLETE SET OF DRAWING LIFT, 50 yards long, 20 in. diameter.

A COMPLETE SET OF PLUNGER LIFT, 30 yards long, 12 in. diameter.

A PAIR OF HORIZONTAL ENGINES, cylinders 18 inches diameter, 3 ft. 6 in. stroke, with winding gear and strong steam capstan attached.

A CRUSHER FOR LEAD ORE, with raff wheel, &c., complete, and TWO DOUBLE-FLUED BOILERS, 30 ft. long, 6 ft. diameter, with all fittings and mountings complete.

State price for the whole, or any part, which must be in thoroughly good working order, delivered at the company's mine, 1½ mile on a good road from the Mold Railway Station.

Applications to be sent to Mr. J. E. EDWARDS, Town Hall Chester.

WANTED, a 6-horse power WINDING and PUMPING ENGINE, to raise by wire rope 19 cwts. 160 feet high, at the rate of about 100 feet per minute, and pump about 300 gallons of water per hour to a height of 150 feet.

Apply to Mr. G. PHILLIPS, Drainage Works, Torquay.

WANTED, a SMALL WINDING ENGINE, suitable for QUARRY PURPOSES.

Address, with full particulars, J. W. COCKLE, Ullenhall, Hockley Heath, Birmingham.

ON SALE, TWO CORNISH BOILERS, 30 ft. by 7 ft. diameter. Two flues through each. Safe at 60 lbs. pressure working.

Apply to HENRY PARKINSON, Foundry-street, Bolton.

ON SALE, ONE PAIR of 18 in. high-pressure HORIZONTAL ENGINES, for winding, fitted with slot link motion. First-class pair of engines.

Apply to HENRY PARKINSON, Foundry-street, Bolton.

ON SALE, ONE PAIR of 15 in. HORIZONTAL WINDING ENGINES, with slot link motion. Will be sold cheap.

Apply to HENRY PARKINSON, Foundry-street, Bolton.

ON SALE, ONE 25-horse power double cylinder PORTABLE ENGINE, fitted with slot link motion for winding.

ONE 20-horse power double cylinder PORTABLE ENGINE.

Will be sold cheap, and are in first-class order.

Apply to HENRY PARKINSON, Foundry-street Boiler Works, Bolton, Lancashire.

ON SALE, ONE 8-horse power PORTABLE ENGINE, fitted up with winding drum; slot link motion; made by Clayton and Shuttleworth. Price £130.

Apply to HENRY PARKINSON, Foundry street, Bolton.

ON SALE, ONE PAIR of 25 inch. coupled HORIZONTAL WINDING ENGINES, with drums and brake gear. Also ONE PAIR of 22 in. ditto. Will be sold cheap.

Apply to H. PARKINSON, Foundry-street, Bolton.

ON SALE, ONE strong well-built condensing BEAM ENGINE, by a first class maker, equal to new; cylinder 36 in. bore, 5 ft. stroke. Can be seen standing, and will be sold cheap. ONE close-built self-contained condensing BEAM ENGINE, stands on independent bed on six columns; cylinder 28 in. bore, 4 ft. stroke. As good as new. Can be seen standing, and will be sold cheap.

Apply to HENRY PARKINSON, Foundry-street, Bolton.

BOILERS ON SALE.—FOUR GALLOWAY'S PATENT BOILERS, 30 ft. by 7 ft., safe to work at 70 lbs. on the square inch.

TWO BOILERS, 28 ft. by 7 ft., with two flues through.

TWO BOILERS, 26 ft. by 7 ft., two flues through.

ONE BOILER, 20 ft. by 7 ft., two flues through.

ONE BOILER, 18 ft. by 6 ft., one flue through.

Also several smaller sizes.

Apply to HENRY PARKINSON, Foundry-street, Bolton.

ON SALE, ONE 16 horse power double cylinder PORTABLE ENGINE, for winding.

ONE 12 horse power PORTABLE ENGINE.

ONE 10 horse power PORTABLE ENGINE.

ONE 8 horse power PORTABLE ENGINE.

ONE 6 horse power PORTABLE ENGINE.

Equal to new, and will be sold cheap.

Apply to HENRY PARKINSON, Foundry-street, Bolton.

ON SALE, ONE PAIR of 25 in. horizontal WINDING ENGINES.

ONE PAIR of 18 in. horizontal WINDING ENGINES.

ONE PAIR of 16 in. horizontal WINDING ENGINES.

ONE PAIR of 15 in. horizontal WINDING ENGINES.

ONE PAIR of 12 in. horizontal WINDING ENGINES.

ONE PAIR of 10 in. horizontal WINDING ENGINES.

ONE PAIR of 7 in. horizontal WINDING ENGINES.

The above engines are now ready for delivery, and fitted with winding drums and brake gear to each pair of engines.

Apply to HENRY PARKINSON, Foundry street, Bolton.

FOR SALE, BY PRIVATE BARGAIN, a DIRECT-ACTING or BULL-DOG BLOW-THROUGH CONDENSING PUMPING ENGINE; diameter of cylinder, 48¾ inches; stroke, 12 feet, with GEARING, &c., at Pit No. 2, TORBANE BOGHEAD COLLIERY, BATHGATE.

The engine can be seen at the pit.

For price, apply to JAMES RUSSEL and SON, Falkirk, N.B.

FOR SALE:—

A 40 in. CORNISH BEAM PUMPING ENGINE, 9 ft. stroke in cylinder, and 7 ft. in shaft (by Perran Foundry Company), in good condition.

THREE 30 ft. by 8 ft. 6 in. SINGLE-FLUED BOILERS, with all fittings complete—one of the above nearly new.

ONE 12 in. cylinder HORIZONTAL STEAM CAPSTAN, with drawing gear and drum complete, is equal to new.

Price for the lot as they stand, £480.

Apply—

JAMES PAYNE, WREXHAM.

FOR SALE, a 18-horse power PORTABLE STEAM ENGINE, with link motion reversing gear, ready for delivery.

A 25-horse power PORTABLE.

An 18-horse power VERTICAL STEAM ENGINE, with link motion reversing gear, also gear to wind and pump.

A 9-ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER.

Apply to—

BARROWS AND STEWART, ENGINEERS, BANBURY.

MR. W. F. STANLEY, MATHEMATICAL INSTRUMENT MANUFACTURER TO H.M.'S GOVERNMENT, COUNCIL OF INDIA, SCIENCE AND ART DEPARTMENT, ADMIRALTY, &c.

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ENGINE DIVIDER TO THE TRADE.

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The misery and confusion wrought by repudiation and depreciated market value of Foreign States and Bonds have effected more loss in a few months than all the mines that have been introduced both at home and abroad during the current century. *Bona fide* and sound progressive Lead Mines are the safest and most expansive investment of the day.

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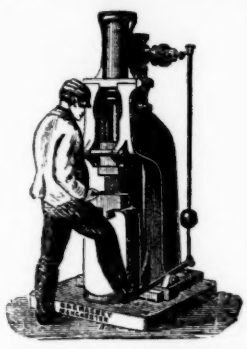
SPECIAL STEAM STAMPS, for Forging, Stamping, Punching, Bolt-making, &c.

CIRCULAR SAWS for Hot Iron.

STEAM HAMMERS for Engineers, Machinists, Shipbuilders, Steel Tilters, Millwrights, Coppersmiths, Railway Carriage and Wagon Builders, Colliery Proprietors, Ship Smiths, Bolt Makers, Cutlers, File Makers, Spindle and Flyer Makers, Spade Makers. Locomotive and other Wheel Makers, &c. also for Use in Repairing Smithies of Mills and Works of all kinds; for straightening Bars, bending Cranks breaking Pig-iron, &c.



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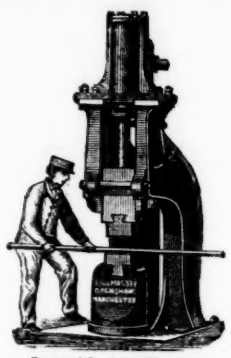
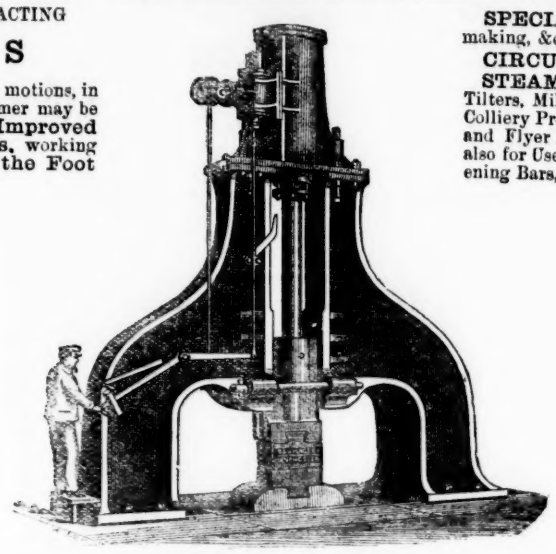


General Smithy Hammer.



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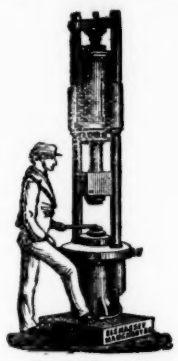

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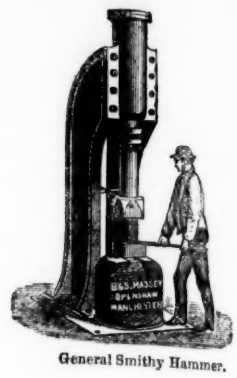

General Smithy Hammer.

From 60 to 100 Steam Hammers and Steam Stamps may usually be seen in construction at the Works.

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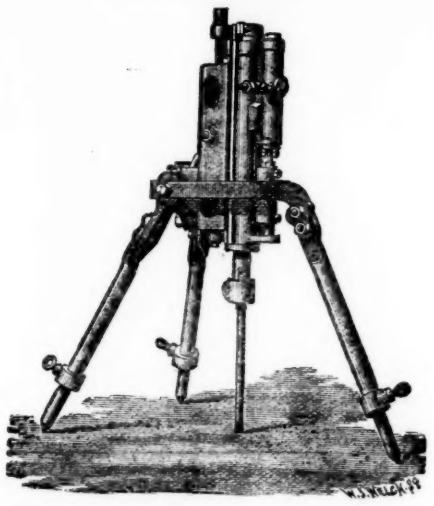
For Tunnels, Mines, Quarries,

AND OTHER WORKS.



Intending purchasers can satisfy themselves that the advantages claimed for the "CHAMPION" over all other Rock Borers are not over-estimated.

For the amount of work it will do, it is the lightest, most compact, most durable, and cheapest in the market.

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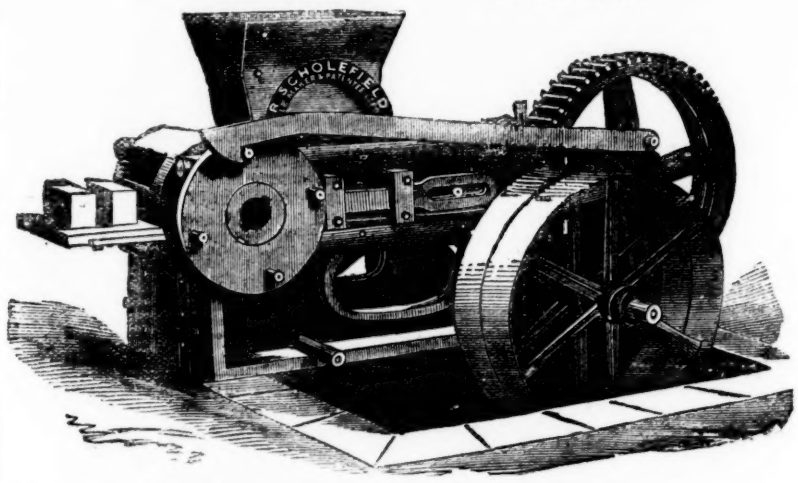
LATEST PATENT BRICK-MAKING MACHINE.

PATENTED 1873.



R. S. begs to call the attention of all Colliery Owners in particular to his PATENT SEMI-DRY BRICK MACHINE, and the economical method of making bricks by his patent machinery from the refuse that is taken from the pits during the process of coal-getting, which, instead of storing at the pit's mouth (and making acres of valuable land useless), is at once made into bricks, at a very small cost, by R. S.'s Patent Brick-making Machinery. If the material is got from the pit hill, the following is about the cost of production, and the hands required to make 10,000 pressed bricks per day:—

2 men digging, each 4s. per day	£0 8 0
1 man grinding, 4s. 6d. per day	0 4 6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0 2 0
1 boy greasing, 1s. 6d. per day	0 1 6
1 engine-man, 5s. per day	0 5 0
1 man wheeling bricks from machine to kiln, 4s. per day	0 4 0
Total cost of making 10,000 pressed bricks	£1 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging.
As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

THE MACHINES CAN BE SEEN IN OPERATION AT THE WORKS OF THE SOLE MAKER AND PATENTEE DAILY.

SCHOLEFIELD'S ENGINEERING & PATENT BRICK MACHINE WORKS.
KIRKSTAL ROAD, LEEDS.

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Alloy, No. II., for pinions, ornamental castings, steem fittings, &c.	£120 per ton.
„ No. IV., for pinions, pumps, valves, linings, cylinders, &c.	130 „
„ No. VI. (must be cast in chill) for bolts, &c. This alloy has very great tensile strength	140 „
„ No. VII., for hydraulic pumps, valves, and plungers, piston rings, bushes and bearings, for steel shafts	140
„ No. XI., special phosphor-bronze bearing metal, wearing five times as long as gun metal	112

The prices of castings vary according to the pattern, the quantity required, and the alloy used.

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THOMAS TURTON AND SONS,

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CAST STEEL for PUNCHES, TAPS, and DIES
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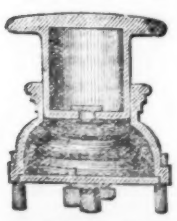

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Where the largest stock of steel, files, tools, &c., may be selected from.

STONE'S PATENT [GROUND GLASS] BOILER COATING.

THE MOST EFFECTIVE IN USE, AND IMPERISHABLE

STONE'S PATENT METAL CASING for Stationary & Marine Boilers

may be used with any coating, and is by far the greatest economiser of heat yet introduced.

With the two combined only 7 degrees of heat is lost from the boiler, and the boiler-room kept at a temperature of only 17 degrees above the outer air.

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THE DOTTED LINES SHOW THE ORDINARY SECTION, AND THE DARK GROUND THE IMPROVED SECTIONS.—A saving of at least 30 per cent. is effected by the great reduction in weight of material.—For price and particulars apply to—

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NOTICE.—These Sections are Registere

THE MINING SHARE LIST.

BRITISH DIVIDEND MINES.

Shares.	Mines.	Paid.	Last wk.	Clos. Pr.	Total divs.	Per share.	Last paid.
[illegible]	Alderley Edge, c, Cheshire*	10 0 0	—		12 11 8	0 5 0	Jan. 1876
15000	Balmynheer, t, Wendron (4000 to is.)	1 0 0	—		0 2 0	0 2 0	Nov. 1875
30000	Bampfylde, c, i, mn., Devon*	1 0 0	1½	1¾ 1⅞	0 2 0	0 2 0	June 1873
400	Botallack, t, c, St. Just§	116 5 0	45	40 45	619 15 0	5 0 0	Aug. 1872
4000	Brookwood, c, Buckfastleigh	1 16 0	2	1½ 2	3 16 0	0 2 0	Nov. 1875
3348	Cargoll, s-l, Newlyn§	6 6 0	—	3 3½	4 16 3	0 12 6	Oct. 1872
6400	Cashwell, l, Cumberland*	2 10 0	—		1 7 6	0 2 0	Aug. 1875
1000	Carn Brea, c, t, Illogan†	35 0 0	39	36 38	398 0 0	1 0 0	Feb. 1874
6000	Cath. & Jane, l.* Penrhyndendraeth	5 0 0	—		0 7 6	0 7 6	June 1873
2450	Cook's Kitchen, t, Illogan†§	22 9 9	3½	3 3½	11 17 0	0 7 6	Jan. 1873
10240	Devon Gt. Consols, c, Tavistock†*§	1 0 0	3	3 3½	116 10 0	0 12 0	May 1872
4296	Dolcoath, c, t, Camborne	10 14 10	36	34 36	109 18 9	0 7 6	May 1876
6500	Drake Walls, t, c, Calstock	6 0 0	¾	½ ¾	0 2 0	0 2 0	July 1874
15000	Duchess of Westminster,* l, Holywell	1 0 0	—		0 3 0	0 2 0	Feb. 1876
10000	East Balleswidden, t, Sancreed*	1 0 0	—		0 2 11	0 0 5	Feb. 1874
6144	East Caradon, c, St. Cleer†	2 14 6	1¼	1 1¼	14 19 0	0 2 0	Oct. 1872
300	East Darren, l, Cardiganshire	32 0 0	—		234 10 0	1 0 0	May 1876
6400	East Pool, t, c, Illogan	0 9 9	13	12 13	14 14 3	0 2 0	July 1876
1906	East Wheal Lovell, t, Wendron*‡§	6 19 0	3	2 3	20 7 6	0 7 6	Oct. 1874
2300	Foxdale, l, Isle of Man*†	25 0 0	—		82 5 0	0 10 0	Feb. 1876
40000	Glasgow Cara., c* [30,000 £1 p., 10,000 15s. p.]		1¼	1 1¼	0 11 10	0 2 0	Jan. 1876
15000	Great Dyliffe,* l, Montgomeryshire	4 0 0	4½	4¼ 4½	0 2 6	0 2 6	Apr. 1876
[illegible]	Great Laxey, l, Isle of Man*	4 0 0	18	17 18 xd	20 3 0	0 10 0	July 1876
615	Great Retallack, l, bl, Perranzabuloe	5 18 6	1⅛	1 1⅛	0 1 6	0 1 6	May 1876
25000	Great West Van, l, Cardigan*	2 0 0	⅝	⅜ ⅝	0 2 0	0 1 0	Aug. 1874
5908	Great Wheal Vor, t, c, Helston†§	41 12 6	¾	½ ¾	15 19 6	0 2 6	June 1872
6400	Green Hurth, l, Durham*	0 6 0	—		1 12 0	0 4 0	Oct. 1874
20000	Grogwinion, l, Cardigan*	2 0 0	6⅛	6 7	0 5 6	0 2 6	Jan. 1876
9830	Gunnislake (Clitters'), t, c	5 5 0	2¼	2⅛ 2⅜	0 12 9	0 2 0	June 1876
1024	Herodsfoot, l, near Liskeard†	8 10 0	3¼	3⅛ 4	62 5 0	0 15 0	Oct. 1872
18000	Hingston Down, c, Calstock*† (£1 sh.)	2 5 0	⅜	⅜ ⅝	4 4 0	0 1 0	Nov. 1875
25000	Killaloe, sl, Tipperary	1 0 0	—		0 3 11½	0 0 6	Mar. 1873
400	Lisburne, l, Cardiganshire	18 15 0	60	60 62	574 10 0	1 0 0	July 1876
14000	Llanidloes,* l, Montgomery	3 0 0	3⅛	3 3⅛	7½ per cent.		Nov. 1875
5120	Lovell, t, Wendron	0 10 0	—		0 17 6	0 1 6	Jan. 1874
9000	Marke Valley, c, Caradon	5 0 6	1¼	1⅛ 1¼	7 15 0	0 2 0	Jan. 1876
11000	Melindur Valley, l, Cardigan*	3 0 0	—		0 7 2	0 3 7	Jan. 1875
9000	Minera Mining Co., l, Wrexham*	5 0 0	16	15 16	64 16 2	0 6 0	May 1876
20000	Mining Co. of Ireland, cl, c, l*	7 0 0	5½	5¼ 5½	23 11 6	0 3 6	Jan. 1876
512	North Busy, c, Chacewater	3 9 6	—		0 10 0	0 10 0	Dec. 1875
12000	North Hendre, l, Wales	2 10 0	—		1 2 6	0 2 6	Nov. 1875
2000	North Levant, t, c, St. Just§	12 2 0	—		4 13 0	0 12 0	Sept. 1873
27855	Old Treburgett,* s-l, ordinary shares	1 0 0	—		0 0 9	0 0 9	Feb. 1874
9258	Old Treburgett,* s-l (10 per ct. pref.)	0 10 0	¾	¾ ⅞	0 1 4½	0 0 6	July 1874
5000	Penhalls, t, St. Agnes	3 0 0	—		3 13 6	0 2 0	July 1875
45793	Penstruthal, t, c, Gwennap	2 0 0	⅞	¾ ⅞	0 2 8	0 0 8	Nov. 1875
6000	Phœnix, t, c, Linkinhorne§	4 13 4	—		39 19 10	0 4 0	Nov. 1872
18000	Prince Patrick,* s-l, Holywell	1 0 0	—		0 14 0	0 1 3	Jan. 1876
1120	Providence, t, Lelant†§	17 16 7	2¼	2 2¼	104 12 6	0 10 0	Sept. 1875
12000	Roman Gravels, l, Salop*	7 10 0	14⅝	14¼ 14⅝	6 4 6	0 8 6	May 1876
512	South Caradon, c, St. Cleer	1 5 0	125	120 130	728 0 0	2 0 0	May 1876
6123	South Condurrow, t, c, Camborne‡	6 5 6	4½	4 4½	1 18 6	0 3 6	June 1876
10000	So. Pr. Patrick,* s-l (8000 sh. issued)	1 0 0	—		0 7 0	0 1 0	Oct. 1875
12000	Tankerville, l, Salop*	6 0 0	10¼	10 10½	4 7 0	0 5 0	May 1876
6000	Tincroft, c, t, Pool, Illogan†	9 0 0	19	18 19	49 8 6	0 5 0	May 1876
15000	Van, l, Llanidloes*	4 5 0	38	36 38 xd	18 5 6	0 16 0	June 1876
5600	W. Chiverton, l, Perranzabuloe†	12 10 0	17½	17 19	54 0 0	0 10 0	Apr. 1876
1783	West Poldice, St. Day	10 0 0	16	14 16	1 14 0	0 4 0	Feb. 1876
512	West Tolgus, c, Redruth	95 10 0	58	55 57½	14 15 0	1 5 0	July 1876
2048	West Wheal Frances, t, Illogan	27 3 9	6⅛	6 7	3 12 6	0 5 0	Oct. 1872
12000	West Wye Valley,* l, Montgomery	3 0 0	4½	3¾ 4¼	0 3 0	0 3 0	May 1876
512	Wheal Basset, c, Illogan†§	11 2 6	15	10 15	[illegible] 10 0	1 10 0	Aug. 1872
2048	Wheal Jane, t, Kea	2 13 10	1¼	1 1¼	8 5 0	0 5 0	July 1875
4295	Wheal Kitty, t, St. Agnes	5 4 6	2⅜	2⅛ 3	11 19 6	0 2 6	Dec. 1874
80	Wheal Owles, t, St. Just§	86 5 0	150	140 150	522 10 0	4 0 0	Aug. 1872
6000	Wheal Prussia, t, Redruth	2 0 0	—		0 3 0	0 2 0	Dec. 1875
25000	Wicklow, c, sul, i, Wicklow	2 10 0	2	1⅞ 2	52 9 0	0 2 6	Mar. 1872
10000	Wye Valley, l, Montgomery*	3 0 0	7½	6½ 7½	0 6 0	0 3 0	Aug. 1875

FOREIGN DIVIDEND MINES.

Shares.	Mines.	Paid.	Last wk.	Clos. Pr.	Total divs.	Per share.	Last paid.
35500	Alamillos, l, Spain*†	2 0 0	2⅛	2 2⅛	1 14 9	0 2 6	Mar. 1876
20000	Almada and Tirito Consol., s*†	1 0 0	⅜	¼ ⅜	0 6 3	0 1 0	May 1876
20000	Australian, c, South Australia†	7 7 6	2	1½ 2	0 15 6	0 2 0	July 1875
10000	Battle Mountain,* c, (6240 part pd.)	5 0 0	—		0 10 0	0 10 0	Nov. 1872
15000	Birdseye Creek, g, California*	4 0 0	1	¾ 1	0 14 0	0 2 6	June 1874
12320	Burra Burra,* c, So. Australia	5 0 0	—		70 0 0	0 10 0	Oct. 1872
20000	Cape Copper Mining,*† So. Africa	7 0 0	40	40 41	24 15 0	1 0 0	June 1875
40000	Cedar Creek, g, California*	5 0 0	⅝	⅜ ⅝	0 5 0	0 2 6	June 1873
20000	Central American Association*†	0 16 6	—		0 6 0	0 1 0	July 1869
15000	Chicago, s, Utah*	10 0 0	6	5 6	2 0 0	0 4 0	May 1876
21000	Colorado Terrible, s-l, Colorado*†	5 0 0	1½	1 1⅛	0 13 6	0 4 0	Jan. 1875
10000	Copiapo, c, Chili* (£10 shares)	16 15 0	—		7 8 5	0 2 6	Jan. 1876
1 0000	Den Pedro North del Rey*†	0 16 0	⅛	⅛ ¼	2 5 9	0 2 0	Mar. 1872
23500	Eberhardt and Aurora, s, Nevada*†	10 0 0	8¼	8⅛ 8¼	1 5 0	0 5 0	July 1876
50000	Emma,* g, s, Utah	20 0 0	¾	½ ¾	3 12 0	0 6 0	Dec. 1872
70000	English and Australian, c† S. Aust.	2 10 0	1⅛	1¼ 1⅛	2 18 9	0 2 0	Mar. 1876
15000	Ferguson, g, California*	2 0 0	—		0 3 0	0 2 0	April 1873
30000	Flagstaff, s, Utah*	10 0 0	1⅞	1⅝ 1⅞	4 2 0	0 5 0	July 1873
25000	Fortuna, l, Spain*†	2 0 0	6	5½ 6	5 15 10	0 8 0	Mar. 1876
55000	Frontino & Bolivia, g, New Gran.*†	2 0 0	2⅜	2⅜ 2⅝	0 1 0	0 1 0	June 1876
30000	Gold Run, hyd.	1 0 0	¾	⅝ ¾	0 2 4	0 0 4	Oct. 1872
68000	Kapunda Mining Co. Australia†	1 3 0	—		0 2 4	0 0 6	June 1873
20000	Last Chance, s,* Utah	5 0 0	½	¼ ½	0 14 0	0 2 0	July 1873
15000	Linares, l, Spain*†	3 0 0	6	5⅞ 6	15 19 2	0 10 0	Mar. 1876
65000	London and California, g*†	2 0 0	⅜	⅛ ⅜	0 1 0	0 1 0	July 1875
7837	Lusitanian, Portugal*† (£5 shares)	3 10 0	2	1½ 2	1 11 6	0 1 6	Mar. 1873
5000	Mammoth Copperopolis of Utah, c, s	10 0 0	—		0 5 0	0 5 0	Dec. 1872
5000	Mountain Chief, s, Utah*	10 0 0	—		0 4 0	0 4 0	Jan. 1873
18000	Prussian Mining & Ironworks, cl, i.	30 0 0	—		6 0 0	3 0 0	July 1873
10000	Pontgibaud, s-l, France†	20 0 0	18	16 18	20 14 2	1 2 2	Nov. 1875
100000	Port Phillip, g, Clunes*†	1 0 0	⅜	½ ⅜	1 8 0	0 1 0	Jan. 1872
54000	Richmond Consols, s, Nevada*†	5 0 0	9	9⅛ 9⅜	2 14 0	0 7 6	May 1875
40000	Santa Barbara,* g, Brazil	0 10 0	1⅞	1⅝ 1⅞	0 1 3	0 1 3	Apr. 1876
120000	Scottish Australian Mining Co.*†	1 0 0	1⅛	1⅛ 1⅞	15 per cent.		May 1876
80000	Scottish Austral. Mining Co., New	0 5 0	⅜	¾ ⅞	15 per cent.		May 1876
112500	Sierra Buttes, g, California*†	2 0 0	1¼	1¼ 1½	1 14 0	0 2 0	Apr. 1876
60000	South Aurora, s, Nevada*	5 0 0	⅜	¼ ½	0 14 2	0 2 0	Nov. 1873
£253000	St. John del Rey*† (£5 stock and multiples dealt in)			340 350	½ year...25 p. ct. for June 1876		
15000	Sweetland Creek, g, California*†	4 0 0	⅜	⅛ ⅜	3 8 0	0 2 0	June 1876
20000	Tolima, g, s* So. America	5 0 0	3¼	3 3¼	0 11 6	0 6 6	May 1874
15000	Western Andes, s,* New Granada	5 0 0	—		2 14 10	0 3 3	July 1876

NON-DIVIDEND FOREIGN MINES.

Shares.	Mines.	Paid.	Last Pr.	Clos. Pr.	Last Call.
20000	Anglo-Australian, g, Victoria*	2 10 0	—		Sept. 1872
5000	Anguilla Phosphate, West Indies (4000 issued)	10 0 0	—		Fully pd.
12000	Argentine, g, Argentine Republic	5 0 0	6½	5¾ 6¾	Fully pd.
10000	Australian Central, g* (also 6000 deferred shares)	1 0 0	—		Fully pd.
3000	Bellavista, s, Peru* (£10 shares)	10 0 0	—		Fully pd.
30000	Blue Tent, hyd., California	5 0 0	3⅛	3 3¼	Fully pd.
50000	Braganza, g, Brazil*†	0 15 0	—		Oct. 1870
12000	Camp Floyd, s, Utah*	10 0 0	—		Fully pd.
35000	Cesena Sulphur Company, Romanga, Italy*	10 0 0	—		Fully pd.
50152	Chontales, g, s, Nicaragua*† (and 12,542 of £1 15s.)	2 0 0	½	⅜ ½	Fully pd.
6000	Clifton, s, Colorado*	5 0 0	—		Feb. 1873
16000	Condes of Chili, s-l	5 0 0	6½	5¾ 6¾	Fully pd.
10000	Crescent, g, Plumas County, California*	10 0 0	—		Fully pd.
55000	Excelsior Hydraulic Gold Washing Co., California*	5 0 0	—		Dec. 1871
100000	Exchequer, g, s, California*†	1 0 0	1⅞	1⅝ 1⅞	Fully pd.
40000	Holcombe Valley, g,* California	1 0 0	—		July 1873
6000	Hornachos,* s-l, (£10 shares) Spain	10 0 0	15⅝	14½ 15½	Jan. 1874
20000	Imperial Brazilian Collieries, Brazil*	5 0 0	—		Fully pd.
100000	I. X. L., g, s, California*	1 0 0	1⅛	⅞ 1	Fully pd.
50000	Javali, g, Nicaragua*	2 0 0	⅜	¼ ½	Fully pd.
12000	Lanestosa,* l, z, Viscaya, Spain (£2 shares)	1 15 0	—		Mar. 1876
75000	Malabar, g, Colombia* (65000 issued)	1 0 0	—		Fully pd.
40000	Malpaso, g, Colombia* (10000 pref. shares, fully paid)	1 0 0	—		Fully pd.
12000	Menzenberg, c, Honnef, Germany*	5 5 0	—		Fully pd.
6000	Monte Loreto, g, c, Italy*	5 0 0	—		Fully pd.
65000	New Quebrada, c, Venezuela*	5 0 0	4	3¾ 4	Fully pd.
50000	New Rosario, s, Mexico*	1 0 0	—		Fully pd.
30000	New Zealand Kapanga, g, Coromandel*	5 0 0	1	⅞ 1	Fully pd.
3000	Oregon,* g, Oregon, U.S. (preference shares)	4 0 0	4¼	4 4¼	Sept. 1875
80000	Panulcillo, c, Chili*† (£80000 debentures)	4 0 0	2¼	2 2¼	Fully pd.
80000	Pestarena United, g, Italy*†	3 0 0	¼	⅛ ¼	Fully pd.
50000	Rica, g, Colombia* (40000 issued)	1 0 0	—		Fully pd.
£2,1[illegible]1,000	Rio Tinto,* c, Huelva, Spain	Stock	57	55 57	Fully pd.
100000	Rossa Grande, g, Brazil*† (£1 shares)	0 19 0	⅛	⅛	July 1872
30000	Russia Copper, Orenburg and Ufa*†	10 0 0	3	2½ 3	Fully pd.
25000	San Pedro, c, Chili*	2 0 0	1⅛	1⅛ 1⅜	Fully pd.
10000	Silver Plume, s, Colorado*	1 0 0	—		Fully pd.
37500	Snowdrift, s, Colorado*	2 0 0	—		Fully pd.
30000	Tecoma, s, Utah*	10 0 0	¾	½ ¾	Fully pd.
20000	Thornhill Reef, g, Australia*	1 0 0	¼	⅛ ¼	Fully pd.
43174	United Mexican, s, Mexico*†‡	28 15 3	2	1¾ 2	May 1875
14000	Utah, g, s-l, Utah*	5 0 0	—		Fully pd.
25000	Victoria (London)*, g, Australia (25,000 sh. 16s. pd.)	1 0 0	½	¼ ½	Fully pd.
75000	Yorke Peninsula, c, South Australia	1 0 0	⅞	⅝ ⅞	Fully pd.
40000	Yorke Peninsula, c, South Australia Preference	1 0 0			

§ Have made calls since last dividend was paid.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS.

	Closing Prices.	
Argentine, 1868, 6 per cent.	44	46
Bolivia, 6 per cent.	17	19
Brazilian, 1865, 5 per cent.	92	94
Chilian, 1866, 7 per cent.	98	102
City of Providence, 5 p.c. coupon bonds	94	96
Egyptian, 1862, 7 per cent.	37	39
Do., 1868, 7 per cent.	39	41
Do., 7 per cent., V.M.L.	39	41
Do., 9 per cent. guar.	40	45
Do., 7 per cent., K.M.L.	37¼	38¼

	Closing Prices.	
Foreign and Col. Gov. Trust, 5 p. cent.	68	70
Do., 5 per cent., 2d issue	50	60
Do., 6 per cent., 3d issue	55	62
Do., 1872, 4th issue	55	62
Do., 1873, 5th issue	50	60
Peruvian, 1870, 6 per cent.	15	16
Do. 1872, 5 per cent.	11¼	12¼
Russian, 5½ per cent. L. Mort.	78	83
Spanish, Quicksilver Mort., 5 p. cent.	87	89
United States Mort., 6 per cent.	95	96

NON-DIVIDEND MINES.

Shares.	Mines.	Paid.	Last wk.	Clos. Pr.
40000	Aberdaunant, l, Llanidloes*	1 0 0	—	1¼ 1⅜
10000	Aberystwith,* s-l, Cardigan	5 0 0	—	
7830	Alrigg. & Burng.,* t, St. Aust. (£3 sh.)	1 10 0	2⅜	2⅜ 2⅝
18000	Ambrose Lake, t, c, Liskeard	1 18 6	—	
13000	Assheton, l, Carnarvonshire*	5 0 0	1⅛	1 1⅛
5000	Ballycummisk,* c, Schull	2 0 0	—	
12000	Bedford United, c, Tavistock	1 17 6	⅜	⅞ 1
28000	Belstone,* c, Devon (27,000 fully pd.)	1 0 0	3	2¾ 3
15000	Blaen United,* s-l, Cardigan	1 0 0	1⅛	⅞ 1⅛
15000	Blue Hills, t, c, St. Agnes	2 11 6	—	
2000	Bowden Hill,* mn	1 0 0	—	
6000	Bradwell Moss Rake	1 0 0	1⅛	⅞ 1⅛
20000	Brynambor, l, Cardigan	1 0 0	—	
4893	Bwadrain, s-l, Cardigan*	4 0 0	—	
4127	Bwlch Consols, s-l, Cardigan*‡	5 0 0	—	
30000	Caldbeck Fells, l, Cumberland*	2 0 0	—	
5584	Carn Camborne, c, t, Camborne	5 3 6	⅜	⅜ ⅜
10000	Cathedral, t, c, Gwennap*	1 10 0	1⅝	1⅜ 1⅝
20000	Central Foxdale, l, Isle of Man* (£2 sh.)	1 0 0	—	
10000	Central Van,* l, bl, Llanidloes	5 0 0	—	
20000	Cwm Dwyfor,* c, s-l, Carnarvonshire	1 0 0	1⅛	1 1⅛
15000	Cwm Nant Ddu,* l, Montgomery	1 0 0	—	
3000	Cwmystwith (New) [5l. shares]	4 0 0	—	
10000	Denbighshire Consolidated, l*	3 0 0	3	2½ 3
656	Ding Dong, t, Gulval	51 9 6	4	3½ 4
10000	Dubby Syke, l, Durham*	0 9 0	⅜	⅜ ⅝
10000	Duchy Great Consols, c, Calstock	5 0 0	—	
512	East Basset, c, Redruth†‡	77 7 6	15	10 15
800	East Black Craig,* l., Scotland	25 0 0	—	
4000	East Chiverton, l, Perranzabuloe	6 12 0	—	
6000	East Grenville, c, Camborne	7 8 6	—	
30000	E. Nant-y-mwyn,* l, Brecknockshire	1 0 0	⅜	¼ ⅜
6000	East Tywarnhaile, c, St. Agnes	0 10 0	4⅛	4⅛ 4⅜
15000	East Van, l, Llanidloes*	5 0 0	5¾	[illegible]
20000	Elgar,* s-l, Cardiganshire	1 0 0	1¼	1 1¼
12800	Florence and Tonkin United* s	0 10 0	—	
5000	Frank Mills, l, Christow	5 6 0		
6000	Fronvellan, l, Mont.* [4000 sh. fy. pd.]	1 0 0	—	
3950	Gawton, c, Tavistock	4 1 6	⅜	⅜ ⅜
12000	Glan Clwyd,* l, Gwyddelwern	1 0 0	⅞	¾ ⅞
10000	Glan Severn, s-l, Flintshire	1 0 0	—	
2000	Glenroy,* s-l, Isle of Man	4 0 0	6⅜	6⅛ 6⅜
10000	Glyn,* l, Llanidloes	2 0 0	3⅛	3¼ 3⅜
15000	Gobbett, t, Dartmoor	1 0 0	—	
12000	Goginan, and Level Newydd, Card., l	2 10 0	—	
100000	Gold, g, Merionethshire	1 0 0	—	
20000	Goreu,* s-l, Carmarthen	1 0 0	—	
7500	Gorsedd and Merllyn Cons., l, Flint	2 10 0	3	2⅛ 3
20000	Gt. East Foxdale, l, I. of Man (1l sh.)	0 15 0	—	
9500	Great Pant-y-Pydew, l, Holywell	2 0 0	—	
6000	Great Wheal Eleanor, t, North Bovey	1 0 0	—	
18000	Grosvenor, l, Holywell (£1 sh.)	0 7 0	3	2 3
10000	Harehope Gill,* l, Durham (£1 sh.)	0 3 6	—	
6400	Harwood,* l, Durham	0 15 0	—	
6000	Keswick United, l*	5 0 0	1	⅞ 1
6000	Killifreth, t, Chacewater	1 8 0	—	
25000	Kingston Consols, s-l, Cornwall	1 0 0	1	⅞ 1
12000	Ladywell,* l, Salop	2 10 0	1⅛	1 1⅛
2500	Levant, c, t, St. Just	9 6 6	1⅜	1¼ 1⅜
64	Llandillo, s-l, bl, Flintshire	50 0 0	—	
15000	Llanlivery Cons., t, c, ars, Llanlivery	1 0 0	—	
25000	Llanrhaiadr, l, Montgomery*	2 0 0	1⅛	1⅛
30000	Llanrwst,* l, Carnarvon	2 0 0	—	
15000	Llwyn Teify,* s-l, Cardigan	1 0 0	3⅛	2⅜ 2⅞
6000	Medlyn Moor, t, Wendron	1 4 10	—	
10000	Mellanear Copper, Hayle*	2 0 0	1⅜	1⅛ 1⅜
13000	Monydd Gorddu, l, Cardigan*	5 0 0	—	
4000	Nanty, l, Montgomeryshire*	1 0 0	4	3½ 4
25000	Nant-y-Ronen, s-l, Cardigan*	1 0 0	—	
12000	Neptune,* c, Perranuthnoe	0 5 0	—	
10000	New Beldon, l, Northumberland*	1 0 0	—	
3000	New Chiverton,* l, Perranzabuloe	6 0 0	—	
20000	New Consols, c, Tavistock*	3 0 0	6⅛	6¼ 6⅛
8000	New Crickheath,* l, Shropshire	2 0 0	1	⅞ 1
8000	New Dolcoath, t, c, Camborne*	3 0 0	—	
20000	New East Foxdale, s-l, Isle of Man	0 15 0	1⅛	1 1⅛
16000	New Fowey Consols, t, St. Blazey*	3 0 0	—	
2 00	New Hendra, t, Breage	2 9 0	2	1⅛ 2
10000	New North Pool,* c, Illogan	3 0 0	1	⅞ 1
6400	New Pembroke, t, c, Par Station	5 8 0	—	
5000	New Rosewarne, c, Gwinear	5 17 0	⅜	⅛ ⅜
5000	New St. Agnes,* t, St. Agnes	5 0 0	⅜	⅜ ⅜
3200	New South Merllyn, l, Flint*	2 10 0	5¼	5 5¼
4 00	North Cornwall, l, Cornwall (£5 sh.)	3 0 0	—	
17000	North Laxey,* Isle of Man	2 0 0	—	
20000	North Prince Patrick,* l, Holywell	1 0 0	1	¾ 1
3000	North Wheal Towan, t, c, Illogan	1 19 6	1⅛	1 1⅛
1000	North Rosewarne, c, Gwinear	6 12 6	—	
8000	North Treleigh Wood, t, Redruth*	1 0 0	—	
5936	North Treskerby, c, St. Agnes	3 15 4	1⅛	1 1⅛
6000	Old Talargoch, l, Flintshire*	2 0 0	—	
2500	Old Tincroft, c, t, Lelant*	4 0 0	—	
16923	Parys Mountain,* c, Anglesea	3 0 0	4	3 4
4000	Pateley Bridge, l, Yorkshire	5 0 0	⅞	⅝ ⅞
9530	Pedn-an-drea, t, Redruth§	9 17 0	4	3½ 4¼
6000	Pennant, l, bar, North Wales*	5 0 0	—	
12000	Pennerley, l, Shropshire*	2 0 0	5	4½ 5
12000	Plynlimmon, l, Llanidloes*	3 5 0	1⅛	1⅜ 1⅝
648	Polrose, t, Breage	21 0 0	⅜	⅜ ⅜
10000	Port Nigel,* s-l, Carnarvonshire	3 0 0	—	
2000	Prideaux Wood, t, Llanivery	5 0 0	2	1⅜ 2
12800	Prince of Wales, c, Calstock‡	1 9 0	—	
6000	Relistian Consols, c, Gwinear	0 10 0	⅜	⅜ ⅜
15000	Rookhope, l, Durham*	1 10 0	⅜	⅜ ⅜
5869	Rosewall Hill and Ransom, t	4 17 6	⅜	⅜ ⅞
8000	Rosewarne United, c, t, Gwinear	1 10 0	⅜	⅜ ⅜
3000	Russell, s-l, Swymbridge	0 6 0	—	
5000	Silvercross,* c, t, Marazion	1 0 0	—	
4200	Snowbrook, s-l, Montgomery	5 0 0	⅜	½ ⅜
12000	South Bwadrain, s-l, Llanbadarnfawr	0 10 0	—	
5 00	South Carn Brea, c, t, Illogan	3 1 0	1⅛	⅞ 1⅛
6000	South Cwmystwith, l, Cardiganshire	0 10 0	3	2 3
5000	South Darren, l, Cardigan*	1 10 0	—	
512	South Dolcoath, c, t, Redruth	12 5 0	1⅛	1 1⅛
12000	South Lisburne, l, bl, Cardigan*	0 12 6	—	
18000	South Roman Gravels, l*	1 10 0	1⅛	⅞ 1⅛
6000	South Roskear, t, c, Camborne	6 10 0	5	4 5
6000	South Tolcarne, t, c, Camborne	1 9 0	⅜	½ ⅜
12000	South Van,* l, Montgomeryshire	1 0 0	—	
3000	South Ward, l, Beerferris	5 8 0	1⅛	⅞ 1⅛
937	South Wheal Crofty, c, Illogan	36 0 10	—	
4500	South Wh. Frances, c, Illogan†	6 8 4	1⅛	⅞ 1⅛
432	Spearn Moor, t, Penzance‡	46 17 9	—	
14000	St. Blazey t.* (£2 10s. shares)	2 0 0	—	
6000	St. Lawrence, Amal., l, Flintshire*	2 0 0	—	
12000	St. Harmon,* l, Montgom	3 0 0	3⅛	3⅛ 3⅜
10000	St. Patrick, l, Halkin, Holywell*	1 0 0	1⅛	1⅛ 1⅜
6000	Success, &c., l, Derb. (12,000l. called)	1 0 0	—	
16000	Sunnyside,* l, Durham	2 0 0	—	
30000	Talybont,* s-l, Talybont	1 0 0	1	1 1⅛
6400	Teesdale,* l, Durham	0 18 0	2	1⅞ 2
14000	Teign Valley, l, bar., Bridford	1 0 0	—	
10000	Temple, l, Cardigan*	1 0 0	2⅛	2 2⅛
12000	Trebeigh Consols, s-l, St. Ive	0 4 0	⅜	⅜ ⅜
5000	Treleigh Wood, t, Redruth	5 11 0	—	
547	Trelyon Consols	15 0 0	⅜	⅜ ⅜
12000	Trethellan, s-l, Crantock*	2 0 0	—	
4000	Trumpet Consols, t, Helston‡	9 0 0	—	
5174	Unity Wood, t, c, Kenwyn	3 18 0	1⅜	1⅜
20000	Van Consols, l, Llanidloes*	2 10 0	2	1⅞ 1⅞
1000	Vaughan, s-l, Cardigan	10 0 0	—	
12000	West Assheton, l, Carnarvon	1 0 0	1⅛	1⅛ 1⅜
6000	West Basset, c, Illogan†‡	5 6 8	5½	5½ 6⅛
30000	West Bryn Celyn,* l, Flintshire	1 0 0	—	
3000	West Craven Moor, l, Pateley Bridge*	10 0 0	10⅛	10 11
12000	West Esgair Lle, l, Card.*	2 0 0	⅜	½ ⅜
12000	West Goginan,* Cardiganshire	3 0 0	2⅛	1⅛ 2⅛
15000	West Great Work, t, Breage*	1 0 0	1	¾ 1
10000	West Llangynog, s-l, Montgomery	3 0 0	—	
12000	West Maria & Fortescue, t, c, Lamer.	4 14 0	⅜	⅜ ⅜
3000	West Mary Ann, l, Menheniot	0 3 6	⅜	⅜ ⅜
50000	West Milwr, s-l, Flint	1 0 0	—	
12000	West Pant-y-Go, s-l, Flint*	1 0 0	—	
4000	West Pateley Bridge, l, Yorkshire	5 0 0	5⅛	5 5⅛
3000	West Phœnix, t, Linkinhorne	0 18 0	—	
1408	West Polbreen, t, St. Agnes	3 5 0	—	
10000	West Roskear, t s-l, bl, c, Camborne	0 12 0	3	2⅛ 3
12000	West Tankerville, l, Salop*	3 0 0	1⅞	1½ 1⅞
6000	West Wheal Gorland, t, c	4 0 0	—	
8000	West Wheal Peevor, t, Redruth	0 10 0	—	
600	West Wheal Seton, c, Camborne†	40 0 0	43	45 50
6000	Wheal Agar, c, Illogan	11 10 0	2⅞	2⅛ 2⅞
6000	Wheal Argus, t, Sancreed	0 10 0	—	
2500	Wheal Arthur, t, c, Calstock	1 0 0	—	
741	Wheal Basset and Grylls, t	9 18 6	—	
14000	Wheal Coates, t, St. Agnes	2 0 0	—	
4000	Wheal Crebor, c, Tavistock	4 1 0	2⅛	2⅛ 3
8400	Wheal Emma, t, c, Buckfastleigh	1 10 0	—	
5179	Wheal Grenville, c, Camborne*	1 16 6	1⅛	⅜ 1⅛
2000	Wh. Mary Hutchings,* t, Plympton	1 14 0	—	
3000	Wheal Peevor, t, Redruth	6 5 0	2⅜	2⅜ 2⅜
4096	Wheal Uny, t, s, Redruth	13 6 6	1⅛	1⅛ 1⅛

IRON AND COAL COMPANIES.

Shares.	Company.	Paid.	Prices.
£100	Abbot, John, and Co. [L.]	£75 0 0	3¾
15	Albion Steel and Wire Co. [L.]	12 10 0	14½
5	Alltami Colliery Co. [L.]	5 0 0	par
100	Ashbury Co. [L.]	90 0 0	36
10	Bagnall, John, and Sons [L.]	10 0 0	5⅛
10	Benhar Coal Co. [L.]	10 0 0	par
50	Bilbao Iron Ore Co. [L.]	50 0 0	10
10	Bilson & Crump Meadow Coll. Co. [L.]	10 0 0	5
4	Blaen Cwmbach Coal Co. [L.]	4 0 0	
50	Blaenavon Iron and Steel Co. [L.]	50 0 0	
100	Bolckow, Vaughan, and Co. [L.]...A	40 0 0	
50	Bowling Iron Co. [L.]	50 0 0	9⅛
50	Britannia Ironworks [L.]	25 0 0	
50	Brown, Bailey, and Dixon [L.]	40 0 0	
100	Brown, John, and Co. [L.]	70 0 0	24
5	Cakemore Colliery Co. [L.]	5 0 0	1⅛
100	Cammell and Co. [L.]	80 0 0	
20	Cannock and Huntington Coal [L.]	2 0 0	7
10	Cardiff & Swansea St. Coal Co. [L.]	8 0 0	
10	Cardigan Steel and Wire Co. [L.]	8 10 0	2⅛
10	Central Swedish Iron and Steel [L.]	10 0 0	8⅛
5	Chapel House Colliery	5 0 0	1
50	Charlton Iron Co. [L.]	40 0 0	2
50	Chatterley Iron Co. [L.]	40 0 0	22
10	Chillington Iron Co. [L.]	10 0 0	21
1	Clee Hill Colliery Co. [L.]	1 0 0	5⅛
10	Consett Iron Co. [L.]	7 10 0	
1	Consett Spanish Ore [L.]	1 0 0	11
50	Cooke, William, and Co. [L.]	30 0 0	¼
20	Darlington Iron Co. [L.]	1 0 0	25
50	Davy Brothers [L.]	22 10 0	3⅛
5	Diamond Fuel Co [L.]	4 10 0	11
32	Ebbw Vale Co. [L.]	29 0 0	
100	Fox, Samuel, and Co. [L.]	80 0 0	19
10	General Mining Ass. [L.] (£1 returned)	9 0 0	20
20	Great Western Coal Co. [L.]	17 0 0	4
2	Gwyngwillim Colliery Co. [L.]	2 0 0	
15	Hopkins, Gilkes, and Co. [L.]	11 0 0	
10	Ifton Rhyn Colliery Co. [L.]	10 0 0	9
50	Knowles, Andrew, and Sons [L.]	17 0 0	9⅛
10	Llay Hall Coal, Iron, & Firebrick [L.]	10 0 0	⅞
5	Littledean Woodside Coll. Co. [L.]	5 0 0	
50	Llynvi, Ogmore, & Tondu Co. [L.]	50 0 0	
10	Lydney and Wigpool Iron Ore [L.]	7 5 0	30
10	Marbella Iron Ore Co. [L.]	10 0 0	10
6	Mersey Steel and Iron Co. [L.]	5 0 0	7½
10	Midland Iron Co. [L.]	5 0 0	
5	Mold Argoed Colliery Co. [L.]	5 0 0	3⅛
10	Monkland Iron and Coal Co. [L.]	10 0 0	
4	Mwyndy Iron Ore [L.]	3 10 0	8
100	Nant-y-Glo and Blaina (8 p. c. pref.)	100 0 0	1⅛
1	Nerbudda Coal and Iron	0 8 0	28
20	New Sharlston Collieries [L.] Pref.	20 0 0	par
10	Newport Abercarn Coal Co. [L.]	8 0 0	16
10	Northmptn. Coal, Iron & Wagon [L.]	8 0 0	
10	Northfield Iron Co. [L.]	8 0 0	
1	Norton Green Coal Co. [L.]	1 0 0	3⅛
35	Palmer's Shipbuilding and Iron [L.]	35 0 0	
100	Parkgate Iron Co. [L.]	65 0 0	15
20	Patent Nut and Bolt Co. [L.]	14 0 0	5
20	Patent Shaft and Axletree [L.]	10 0 0	7⅛
20	Pelsall Coal and Iron [L.]	15 0 0	
50	Phœnix Bessemer Co. [L.]	40 0 0	7⅛
50	Rhymney Iron Co. [L.]	50 0 0	21
100	Sandwell Park Colliery Co. [L.]	100 0 0	
50	Ditto New	10 0 0	
50	Shotts Iron Co. [L.]	50 0 0	2
100	Sheepbridge Iron and Coal [L.]	55 0 0	11
50	Silkstone & Dodworth Cl. & Iron [L.]	27 0 0	6
20	Skerne Ironworks [L.]	20 0 0	11⅛
50	Somorrostro Iron Co. [L.]	50 0 0	
20	South Wales Coal Co. [L.]	17 0 0	
100	Staveley Iron and Coal Co. [L.]	60 0 0	34
100	Ditto ditto New	10 0 0	5⅛
20	South Cleveland Ironworks [L.]	20 0 0	
10	Swansea Valley Steam Coll. Co. [L.]	6 0 0	
100	Thames Iron Company	100 0 0	
50	Tredegar Iron and Coal Co. [L.]	12 0 0	3
25	Ditto B. shares	25 0 0	2
20	Ulverston Mining Co. [L.]	12 0 0	1⅛
1	United Bituminous Collieries [L.]	1 0 0	
10	Vancouver Coal [L.]	6 0 0	1⅛
100	Vickers, Sons, & Co. [L.] 6 p. c. deb.	100 0 0	par
50	Welsh Ironworks Co. [L.]	50 0 0	
25	W. Cumberland I. and Steel [L.]	20 0 0	9
10	West Mostyn Coal [L.] (12 p.c. pref.)	5 0 0	
5	West Swansea Colliery Co. [L.]	5 0 0	
10	Whitehaven Iron Co. [L.]	10 0 0	
100	Wigan and Whiston Coal Co. [L.]	70 0 0	
100	Wigan Coal and Iron Co. [L.]	75 0 0	

WAGON COMPANIES.

Shares.	Company.	Paid.	Prices.
10	Birmingham Wagon Co. [L.]	10 0 0	21 22
20	British Wagon Co. [L.]	10 0 0	3⅛ 3⅞
20	Sheffield Wagon Co. [L.]	15 0 0	3⅛ 4⅛
10	Yorkshire Wagon Co. [L.]	10 0 0	3⅛ 4

TELEGRAPH COMPANIES.

Shares.	Company.	Paid.	Prices.
"St."	Anglo-American	100 0 0	58 59⅛
10	Brazilian Submarine	10 0 0	5⅛ 6
20	Direct United States Cab'e	20 0 0	7⅛ 8
10	Eastern	10 0 0	5⅛ 6⅛
10	East. Exten., Australia and China	10 0 0	5⅛ 5⅞
10	Great Northern	10 0 0	8 8⅛
25	Indo-European	25 0 0	19 20
10	Mediterranean Extension	10 0 0	2⅛ 3
8	Reuters	8 0 0	11 12
Stk.	Submarine	100 0 0	205 215
10	West India and Panama	10 0 0	¾ 1
20	Western and Brazilian	20 0 0	5 5⅛
$1000	Western Union, 7 per cent. Mort. Bonds	$1000	107 109

MISCELLANEOUS.

Shares.	Company.	Paid.	Prices.
Stk.	Atlantic and Great Western Leased Lines, Rental Trust	100 0 0	[illegible]
25	Austral. Mort. Land and Finance [L.]	5 0 0	3 3½
25	Australian Agricultural	21 10 0	20 21
10	Avonside Engine [L.]	7 0 0	4 5
Stk.	Baltimore and Ohio, 6 per cent.	100 0 0	113½ 114½
Stk.	Cent. of New Jersey Con. Mort.	100 0 0	[illegible]
Stk.	Cent. Pacific of Calif., 1st Mort. 6 p.c.	100 0 0	98 99
25	City of London Real Property [L.]	12 0 0	½ dis. ½
25	Copper Miners of Eng. (7 p. c. p. ef.)	25 0 0	[illegible]
5	Credit Foncier of England [L.]	5 0 0	1 1½
5	Diamond Rock Boring	4 10 0	[illegible]
15	English and Foreign Credit	8 0 0	[illegible]
16	Fore Street Warehouse [L.]	14 0 0	[illegible]
15	Foster, Porter, and Co. [L.]	10 10 0	10 11
5	Gen. Phos. & Chem. Works Co. [L.]	5 0 0	—
1	Glaisdale Whinstone Quarry	1 0 0	—
17	Hudson's Bay Company	17 0 0	16½ 17½
10	Huntington Copper and Sul. Co.	9 0 0	8½ 9
Stk.	Illinois Central, $100 shares	100 0 0	86 88
Stk.	Illinois & St. Louis Bridge, 1st Mort.	100 0 0	95 97
Stk.	Ditto, 2nd Mort., 7 per cent.	100 0 0	[illegible]
Stk.	Illinois Cent. Sinking Fund, 5 p. cent.	100 0 0	[illegible]
Stk.	Ditto, 6 per cent.	100 0 0	110 112
7½	Imperial Credit [L.]	7 10 0	7⅛ 7⅜
—	Ditto, Surplus Certificate	—	5⅛ 5⅜
Stk.	Lehigh Val. Con. Mort., A, 6. p. cent.	100 0 0	104 106
10	Milner's Safe [L.]	10 0 0	11 12
25	National Discount [L.]	5 0 0	[illegible]
Stk.	N. Cent. Rail. Con. Mort., 6 per cent.	10 0 0	[illegible]
5	Patent Gunpowder Company	5 0 0	[illegible]
10	Pawson and Co. [L]	6 0 0	1 1½
50	Peninsular and Oriental Steam	50 0 0	[illegible]
Stk.	Pennsyl. Gen. Mort. 6 p. cent., 1910.	100 0 0	110 111
Stk.	Ditto, Con. Sink. Fund, 6 p. ct., 1905	100 0 0	103 104
Stk.	Scottish Aust. Investment Company.	100 0 0	155 165
Stk.	Ditto, 6 per cent. Preference	100 0 0	[illegible]
10	Silber Light (ord. sh.)	10 0 0	—
20	Suez Canal shares	20 0 0	[illegible]
12	Telegraph Construc. & Mainte. [L.]	12 0 0	22 23
5	Ditto, Second Bonus Three per Cents	5 0 0	[illegible]
10	Tharsis Sulphur and Copper Co.	10 0 0	[illegible]
Stk.	Union Pacific Land Grant, 1st Mort.	100 0 0	[illegible]
Stk.	Union Pacific Railway, 1st Mort.	100 0 0	[illegible]

b, blende; cl, coal; c, copper; g, gold; l, lead; s, silver; [illegible]
s-l, silver-lead; t, tin; z, zinc.
* Limited Liability Companies; † quoted on the Stock Exchange; ‡ have paid dividends.

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